



GOVERNOR'S SECRETARIAT, BIHAR

RAJ BHAVAN, PATNA-800022

E-mail/Speed Post

Letter No.-BSU(Regulation)-20/2018-...../GS(I), Dated-.....

From,

P.C. Choudhary
Officer on Special Duty (Judl.)

To,

Vice Chancellors
All Universities of Bihar
(Except RAU, Pusa & BAU, Sabour)

Sub.- Regarding implementation of revise Curriculum under Choice Based Credit System at P.G. level in the Universities of Bihar.

Sir,

Reference is invited to this Secretariat's letter No.-BSU(Regulation)-20/2018-1809/GS(I), Dated 10-7-2018, vide which curriculum of 34 subjects of Choice Based Credit System (P.G. level) has been promulgated for its introduction in the Universities of Bihar.

In this regard, revise curriculum of **04** subjects (i.e. **History, Economics, Management (MBA) and Environmental Science**) have been finalized on the basis of recommendations of the panel of subject experts.

Accordingly, the Hon'ble Chancellor after due consideration on the recommendations of subject experts has been pleased to approve implementation of Choice Based Credit System with **04** subjects (P.G. level) in the Universities of Bihar with immediate effects.

Therefore, you are requested to implement the Choice Based Credit System, following all due statutory provisions. The curriculum of these 4 subjects may be downloaded from the Website of Raj Bhavan (www.Governor.bih.nic.in) and be adopted with a variation upto **20%** as per the guidelines of U.G.C.

Yours faithfully,

Sd/-

(P.C. Choudhary)

Officer on Special Duty (Judl.)

Memo No.-BSU(Regulation)-20/2018-2535.../GS(I), Dated-08-10-2018

Copy forwarded to All Officers, Raj Bhavan, Patna / Concerned Assistant, University Section, Raj Bhavan, Patna for information / Guard file for record.

Shri Bijay Kumar, Technical Director, Raj Bhavan, Patna with request to compare and upload all the scanned syllabus of 04 subjects on Website of Raj Bhavan, Patna immediately.

P.C. Choudhary
08-10-2018
Officer on Special Duty (Judl.)

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AECC-1

A- Environmental Sustainability (3 Credit)

B- Swachha Bharat Abhiyan Activities (2 Credits)

Each credit requires 10 hours of teaching- learning for theory and 20 hours for practical assignment field work.

A-Unit -1 Environmental ethics & ecosystem: Concept of sustainable development with reference to human values in western and Indian perspective, sustainable development & conservation of natural resources (Nature, factors, structure, development and people participation) development, environment- rural and urban, concept of Ecosystem.

A-Unit -2 Development and its effect on environment: Environment Pollution - water, air, noise etc. due to Urbanisation, Industrial civilization, Concept of Global Warming, Climatic Change, Green House Effect, Acid rain, Ozone layer depletion. Menace of encroachment of exotic plants particularly parthenium and trees with special reference to impact on habit & habitat on indigenous flora & fauna.

A-Unit -3 Concept of Bio-diversity and its conservation: Environmental Degradation and conservation. Govt. Policies, Social effects and role of social reforms in this direction. Role of science in conservation of environment concept of Three 'R' (reduce, reuse, recycle). Need of environmental education and awareness programme and ecological economics.

B-Unit -4 Swachha Bharat Abhiyan: The concept of Swachhata as personal, Gandhian approach towards social and environmental moral values & concept of swachhata and its relation to moral upgradation of society and freedom struggle. Awareness Programme related to Swachhata. Role of 'Swachhagrahis' in Swachha Bharat Abhiyan.

Sanitation and hygiene, why sanitation is needed, sanitation and human rights, plantation, value of nature, concept of community participation and role of state agencies. Case study of Sanitation, effects of cleanliness, diseases - infectious and vector - born Idea of spread of diseases through body and other biological fluids and excreta.

B-Unit-5 Assignment/Practical/field work based on unit-4

or

Alternative to unit-4 and unit-5 a student can also enrol for Swachha Bharat Internship programme of MHRD.


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Human Values and Professional Ethics (3 Credits)**Gender Sensitization (2 Credits)**

(One credit requires ten hours of theory and twenty hours of practical/assignment/field work)

Unit – 1: Variety of Moral Issues, Principals of Ethics and Morality:-

Understanding the Harmony in the Society (society being an extension of family), Integrity, Work Ethic, Courage, Empathy, Self Confidence, Professional Ideas and Virtues. Ethics as a Subset of Morality, Ethics and Organizations, Duties and Rights of employees and employers.

Unit – 2: Holistic approach to corporate ethics:-

Vedantic Ethics – Tagore, Vivekanand, Gandhi and Aurobindo on Ethics, Ethics in Finance, Business and Environment. Professional Rights, Intellectual Property Rights, Corporate Responsibility. Social Audit and Ethical Investing, Computer and Ethics.

Unit – 3: Professional Ethics:-

Augmenting Universal Human Order, Characteristics of people-friendly and eco-friendly production, Strategy for Transition from the Present State to Universal Human Order, At the Level of Individual- as Socially and Ecologically Responsible Technologists and Managers, At the Level of Society- as Mutually Enriching Institutions and Organizations. Case studies of typical holistic technologies and management patterns.

Unit – 4: Gender – An Overview:-

Gender: Definition, nature and evolution, culture, tradition, historicity; Gender spectrum: biological, sociological, psychological conditioning; Gender based division of labour – domestic work and use value.

Unit – 5: Gender – Contemporary perspectives

Gender justice and human rights: international perspectives, Gender : constitutional and legal perspectives, media & gender, Gender: emerging issues and challenges.

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Generic Elective (GE) course	
Course title: Graphic Designing	
Course code: GE-1	Credit 5 (There shall be 5 units each consisting of one credit)
Course offered in: Semester- IV	
Course content:	
Unit	Topics
I	HTML5 and CSS3: General Introduction to Internet and WWW, Text tags, Graphics, Video and Sound Tags, Link and Anchor Tags, Table Tags, Form Tags, Miscellaneous tags (layers, image maps etc), Events, Web sockets, CSS3, API, Example Applications, etc.
II	PHP Programming and MySQL: Programming constructs, Variable/Constants, GET & POST, Files, User defined Functions, BuiltIn Functions, Cookies, Sessions, Error Handling, MySQL tools and its integration, AJAX, XML, Object Orientation, Form, Facebook and Paypal Integration, Example Applications.
III	Java script and jQuery: Java script – Basic data types, control structures, functions, arrays and objects, events, html DOM, cookies, error handling, multimedia, animation, Example Applications, jQuery – Basics, Selectors, Attributes, DOM, Events, AJAX, CSS, UI, Plug-ins.
IV	Content Management and SEO: WordPress – Installation, Settings, Categories, Posts, Media, Pages, Tags, Links, Comments, Plugins, theme. SEO – Introduction, thumb rules, methods, keyword & title optimization.
V	Assignment / Field Work based and Unit I, II, III and IV.

Note: Students who enrolled for WEB DESIGNING as AEC in Semester II will not be allowed to take Graphic Design as a GE course in Semester IV

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GE-(ii)

Generic Elective (GE) course	
Course title: Inclusive Policies	
Course code: GE-1	Credit 5 (There shall be 5 units each consisting of one credit)
Course offered in: Semester- IV	
Course content:	
Unit	Topics
I	Concept of Inclusive Policy: a. Meaning and Nature of inclusive policy b. Exclusion and Inclusion Controversy, caste based Exclusion
II	Right of Individual and their Redressal a. State Policies and the Rights of Individual b. Obstacles in the fulfilment of Individual Rights, Poverty, Illiteracy, Under Development, Government Policies
III	Sources of Inclusive Policies a. Constitutional Provisions and Inclusive Policies b. Ideas of Amartya Sen.
IV	Inclusive Policies and Human Rights a. Social, Economic, Political and Legal Structure of the Country. b. Bureaucratic corruption, police Atrocities and criminal judicial process.
V	Assignment / Field Work based and Unit I, II, III and IV.

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GE-111

Generic Elective (GE) course	
Course title: Human Rights	
Course code: GE-1	Credit 5 (There shall be 5 units each consisting of one credit)
Course offered in: Semester- IV	
Course content:	
Unit	Topics
I	Conceptual Aspects of Human Rights a. Meaning and Concept of Human Rights b. Human Rights, Natural Rights, Civil Rights, Political Rights and Legal Rights.
II	Evolution of the Concept of Human Rights a. Magna Carta, The united state declaration of Independence: The French Declaration of the Rights of Man and the Citizen: United state Bill of Rights: Geneva Convention of 1864: Universal declaration of Human Rights, 1948. b. International Bill of Rights, Significance of Universal Declaration of Human Rights International Covenant on Civil and political Rights, International Covenant on Economic, Social and cultural Rights.
III	Diversity, Multiculturalism and Human Rights a. Value of Diversity: Collective Cultural Rights and the Idea of Universal Human Rights: Multiculturalism and Minority Rights: protection and promotion of Human Rights in Multicultural Societies. b. Beyond Universal Human Rights: Universalism of human Rights: Nation-State and the Right to national Self-Determination: state Sovereignty and the Politics of Universal Human rights.
IV	Theoretical aspects of Human rights. a. Theories of Human rights-Liberal Perspective-Locke, Rousseau, J.S. Mill, Marxian Perspective-Marx, Gramsci b. Feminist Perspective of Human Rights.
V	Assignment / Field Work based and Unit I, II, III and IV.

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Generic Elective (GE) Course

Credit - 5

Family Management

(One credit requires ten hours of theory and twenty hours of practical/assignment/field work)

Unit 1 : Concept of typical Indian family:

Indian society and Indian family, importance of relationship within family, similarities and dissimilarities in between Indian and western family, definite role of family members.

Unit 2 : Food production and cleanliness:

Cooking - art or science, personal grooming, hygiene & uniform, Do's and don'ts while working in the kitchen, Domestic Food Production, nutrition- Balanced Diet and its function, effect of heat on fat, carbohydrates, proteins, vitamins and minerals. Cholesterol and trans fats and related diseases. Disease producing microbes.

Unit 3 : House keeping:


Equipment handling, care & cleaning & identification of cleaning equipments; Care, cleaning & polishing of surfaces – metals, glass, floor, carpets; Paints, daily cleaning of rooms and bath rooms.

Unit 4 : Safety & health care:

Psychology – child care and care of the elderly. Basic human anatomy and physiology (skeleton, respiratory, circulatory, excretory, nervous & reproductive systems). First aid care in different accidents (hemorrhage, asphyxia, shock & unconsciousness, cardiac arrest, burns, insect bite, snake bite, poisoning, injury etc.). Nursing, first aid box, importance of group practice of yoga and exercise.

Unit 5 : Importance of communication and care in family:

Leadership in family, communication gap between generations, significance of soft-skill, Indian laws related to family problems, understanding and misunderstanding within the family members and among close relatives, in-laws etc. Necessity of small investments for family members.


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Ability Enhancement Course (AEC) / Skill Enhancement Course (SEC)	
Course title: Computers & ICT	
Course code: AEC-1 Or SEC-1	Credit 5 (There shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course content:	
Unit	Topics
I	Basics of 'Computer System': What is a computer? Computer System components – Hardware and Software. Introduction to the terms - Motherboard, SMPS, Processor, RAM, ROM, Ports and Cards. Broad overview of different makes of these components, their availability in the market and their prices.
II	Basics of 'Operating Systems': Introduction to Unix/Linux Operating System. Introduction to Windows Operating System. Basic operations on Unix/Linux and Windows Operating Systems.
III	Information Management: Document Processing and e-Documentation using Word processor like open office. Statistical and Graphical data analysis using spread sheet and statistical packages. Data / Information communication and presentation using PowerPoint.
IV	SSD (Special Skill Development) Detailed study on any one of the following three using Spoken Tutorial: a. Latex b. Accounting software c. Spread sheet using Spoken tutorial d. Matlab/Scilab
V	Networking Basic:- Network topologies, LAN, MAN, WAN, TCP/IP, Knowledge of Networking hardware, Service/Client, Interface. Internet Connectivity
VI	Assignment / Field Work based and Unit I, II, III and IV.

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Web Designing	
Course code: AEC-1/SEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: This paper is designed to enable student to learn basic components required to design and manage a website. The emphasis is given on hands-on training so as to enable students to design their own website.	
Course objectives: To expose students to the technology of web site design and to introduce various tools and languages required for dynamic and creative design of state-of-the-art web sites.	
Course content:	
Unit	Topics
I	HTML5 and CSS3: General Introduction to Internet and WWW, Text tags, Graphics, Video and Sound Tags, Link and Anchor Tags, Table Tags, Form Tags, Miscellaneous tags (layers, image maps etc), Events, Web sockets, CSS3, API, Example Applications, etc.
II	PHP Programming and My SQL: Programming constructs, Variable/Constants, GET & POST, Files, User defined Functions, Built-in Functions, Cookies, Sessions, Error Handling, MySQL tools and its integration, AJAX, XML, Object Orientation, Form, Facebook and Paypal Integration, Example Applications.
III	Java script and jQuery: Java script – Basic data types, control structures, functions, arrays and objects, events, html DOM, cookies, error handling, multimedia, animation, Example Applications, jQuery – Basics, Selectors, Attributes, DOM, Events, AJAX, CSS, UI, Plug-ins.
IV	Content Management and SEO: WordPress – Installation, Settings, Categories, Posts, Media, Pages, Tags, Links, Comments, Plug-in, theme. SEO – Introduction, thumb rules, methods, keyword & title optimization.
V	Lab/Assignment/hand-on training based on Unit I, II, III and IV
Learning outcomes: On completion of this course, the students would: 1. Have a strong foundation to undertake specialized courses in the field of web designing. 2. Develop their own website and manage it.	
The laboratory work will consist of 9-15 Experiments: <ol style="list-style-type: none"> 1. Practicing basic HTML tags, text tags test styles, paragraph styles, headings, lists, Forms, Tables, Link and Anchor Tags etc. 2. Including graphics, video and sound in web pages, Layers & Image Maps 3. Creating animated Gifs, simple flash animations 4. Cascading Style sheets 5. Creating and browsing XML database 6. Installing web server, setting PHP, Creating client and back end script with GET & POST methods (connecting HTML). 7. MySQL commands/tools and this integration with PHP 8. Exercises covering basic introduction to JavaScript and jQuery 9. Development of a web site using Word Press involving a variety of tools practiced above. 	

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)

Course title: : Derivatives and Risk Management		
Course code:	AEC-1/SEC-1	Learning Hours- 50
Course offered in: Semester 2		
Course description: Every investment activity entails an element of risk, even bank fixed deposits once considered to be free from risk are subject to risk like interest rate, inflation and default risk. Therefore, managing risk is one of the Prime Concern for every investor. At the same time, Speculators feel the requirement of such a financial instrument that can help in having gain at a low cost. The answer to all these is understanding and practicing DERIVATIVES. The derivatives are most modern financial instruments in hedging risk. The individuals and firms who wish to avoid or reduce risk can deal with the others who are willing to accept the risk for a price. A common place where such transactions take place is called the 'derivative market'		
Course objectives: 1. To develop skills among the students who are planning to pursue their career in Finance and Banking Sector. 2. To develop knowledge among the students to enable them to take decision under the most difficult situation led by uncertainties in the competitive business world.		
Course content:		
Sl. No.	Topics	No. of Periods
1	Introduction:- Risk as an Investment Strategy- managing risk in the corporate world- credit Risk V/s Market Risk- Default Risk-Foreign Exchange Risk- Interest rate Risk- Systematic Risk and Non-Systematic Risk-Hedging Scheme-Delta-Theta-Gama-vegas-Rho	10
2	Risk and Derivatives based Hedging Strategies Risk Associated with Investment <ul style="list-style-type: none">• Systematic Risk• Non Systematic Risk Hedging- Risk Management <ul style="list-style-type: none">• Strategy of Diversification of portfolio• Strategy of Active Portfolio Management Hedging/Risk Management Through Derivatives: <ul style="list-style-type: none">• Short Hedge• Long Hedge	10
3	Financial Markets and Derivatives: Financial Markets: <ul style="list-style-type: none">• Money Market• Capital Market Order-Driven Market and Types of Orders Traders in Derivatives Market- <ul style="list-style-type: none">• Hedger• Spectator• Arbitrageur	10
4	Derivatives: A Birds eye view Introduction Different derivative transactions: option contract Pay offs from option contract Futures transaction- <ul style="list-style-type: none">• Features of Futures transaction	10

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	<ul style="list-style-type: none"> • Margin Deposit-initial margin and mark-to-market margin <p>Forward transaction-</p> <ul style="list-style-type: none"> • Features of forward transaction • Difference of between options, futures and forward contracts 	
5	<p>SWAP</p> <ul style="list-style-type: none"> • Foreign Exchange Swap • Interest Rate Swap (Plain Vanilla SWAP) • Cross Currency SWAP(Total Loan SWAP) • Derivatives Trading at NSE-Commodity Derivatives Trading in India <p>CASE STUDIES</p>	10
<p>Learning outcomes: By the end of the course students should be able to understand the mechanism of managing and handling risk which explicitly addresses the uncertainties of the competitive corporate world of 21st century.</p>		
<p>A Few Topics for Case Studies: Risk management as Decision-making Process in the Banking Sector-Risk and Uncertain business world-managing risk under the conditions of uncertainty- investment strategy and Risk- Impact of Systematic risk in project-management-importance of the knowledge of various types of risk associated with the investment-Hedging Strategy for Portfolio-delta Hedging-static delta Hedging and Dynamic delta Hedging-theta, gamma, Vegas and Rho Hedging..</p>		
<p>Assignments: Each student has to prepare a dissertation on any topic related to any of the Unit. The dissertation should include the following heads:</p> <ol style="list-style-type: none"> 1. Preface 2. Definition 3. Review of Literature 4. Methodology 5. Observations/Case Study 6. Relevance 7. Decisions 8. Conclusions 9. Reference 		
<p>List Of Books:</p> <ol style="list-style-type: none"> 1. Derivatives and Risk Management by Dhanesh Kumar Khatri-Macmillian Publishers India Limited, Delhi. 2. The Essentials of Risk Management by Michel Crouhy, Dan Galai ISBN: 0071818510/978-0071818513 3. Credit Risk management for Indian Banks by K. Vaidyanthan-Sage Publishing. 4. Risk Management by Indian institute of Banking 5. Risk Management and Financial Institutions by John C. Hull-Published by John Wiley and Sons, New Jersey. 6. Risk Management by Paul Hopkin-Published on Amazon.com 7. Fundamentals of Risk Management: Understanding Evaluating an implementing effective Risk Management by Paul Hopkin-Published on Amazon.Com.Uk, Publisher Kogan Page. 8. Essentials of Risk Management by Michel Crouhy-Publisher MCGraw Hill Education. 9. Essentials of Financial Risk Management by Horcher-Publisher Wiley Bartlett-Publisher Rutledge. 		

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AEC (14)

Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title: Solid Waste Management	
Course code: AEC-1/SEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester-II	
Course description: The course would cover-general introduction including definition of solid wastes– municipal waste, biomedical waste, hazardous waste, e-waste ; legal issues and requirements for solid waste management; sampling and characterization of solid waste.	
Course objectives: 1. Understanding of problems of municipal waste, biomedical waste, hazardous waste, e-waste, Industrial waste etc. 2. Become aware of Environment and health impacts of solid waste mismanagement	
Course content:	
Unit	Topics
I	General introduction including definitions of solid waste including municipal, hospital and industrial solid waste; E-wastes; legal issues and requirements for solid waste management; Solid waste management rules, 2016.
II	Health and environmental issues related to solid waste management
III	Methods of waste collection, collection techniques, waste container compatibility, waste storage requirements, transportation of solid wastes
IV	Treatment and disposal techniques for solid wastes–composting: Composting, Vermicomposting, Autoclaving, Microwaving, Incineration, Non-incineration thermal techniques, Landfilling
V	Source Reduction, Product Recovery and Recycling Recovery of Biological Conversion Products: Composts and Biogas Incineration and Energy Recovery Integrated Waste Management (IWM)
Learning outcomes: After completion of the course students should be able to characterize solid waste; analysis of hazardous waste constituents; understand health and environmental issues related to solid waste management; apply steps in solid waste management-waste reduction at source, collection techniques, materials and resource recovery/recycling, transport, optimization of solid waste transport, treatment and disposal techniques	
Practical: 1. Awareness about disposal of different wastes in waste-bin (Concept of disposal of Biodegradable, Non-biodegradable and bio hazardous wastes in different coloured bins) 2. Method of composting 3. Method of vermicomposting 4. Autoclaving 5. Bio-gas production	

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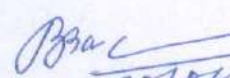
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Assignments:

1. Global and Indian issues related to Solid wastes
2. Health issues related to solid waste management
3. Environmental issues related to solid waste management
4. Disposal methods for biodegradable wastes
5. Disposal methods for Non-biodegradable wastes
6. Disposal methods for Recyclable wastes
7. Biomedical wastes and their disposal methods
8. E-wastes and their disposal
9. Landfilling method of solid waste disposal
10. Vermicomposting method of solid waste disposal etc.

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AEC-(V)

Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title: : Mushroom Technology	
Course code: AEC-1/SEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: The course would cover-general introduction about fungi including a general life cycle of Mushroom, Edible and Poisonous mushroom, Different aspects of mushroom cultivation in relation to environment, Nutritional value of mushrooms, Economic importance and health benefits of mushroom. Identification of mushroom by spore print method. Production method of edible mushrooms – Button and oyster mushroom; Preservation method for mushroom fruiting body- drying. Diseases of mushroom caused by bacteria, fungi and viruses and its control.	
Course objectives: 1. Cultivation methods for edible varieties of mushroom. 2. Preservation method for mushroom fruiting body as well as its spore and mycelium. 3. Awareness of health benefits of mushroom consumption.	
Course content:	
Unit	Topics
I	General introduction about fungi including a general life cycle of Mushroom; Edible and Poisonous mushroom; Different aspects of mushroom cultivation in relation to environment; Economic importance and health benefits of mushroom.
II	Production method of some edible mushroom – Button mushroom (<i>Agaricus bisporus</i>), oyster mushroom (<i>Pleurotus sajorcaju</i>).
III	Preservation method for mushroom fruiting body-drying; Diseases on mushroom caused by bacteria, fungi and viruses and its control.
IV	Isolation and culture of spores, culture media preparation. Production of mother culture, mother spawn, commercial spawn.
V	Different methods of maintenance of mushroom culture and its strain preservation
Learning outcomes: After completion of the course students should be able to understand the cultivation methods for the production of mushrooms viz. Button, Oyster; diseases on mushroom and its remedial measure; preservation method for mushroom fruiting body and its spore as well as mycelium; social, economical, environmental and health benefits of mushroom consumption.	
Practical: 1. Production of mother culture by spore culture. 2. Cultivation of Oyster mushroom. 3. Spore print and microscopic examination of mushroom spore and mycelium. 4. Preservation of mushroom by drying.	
Assignments: 1. Edible mushroom cultivated in India 2. Poisonous mushroom. 3. Cultivation method for Button and Oyster mushrooms. 4. Nutritional and other health benefits of mushrooms. 5. Mushroom spawn production methods etc.	


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AEC-017

Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title: Biofertilizer Technology	
Course code: AEC-1/SEC-1	Credit 5 (There shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: The course would cover-general introduction about different types of biofertilizers. Edible and Different aspects of biofertilizers production in relation to environment protection, soil enrichment and other benefits. Production methods of different types of biofertilizers.	
Course objectives: 1. Structure and characteristic features of different microorganisms used as biofertilizers. 2. Cultivation methods for different types of biofertilizers. 3. Awareness of environmental and agricultural benefits of biofertilizers.	
Course content:	
Unit	Topics
I	Introduction to biofertilizers-Structure and characteristic features of the following biofertilizer organisms: Bacteria: <i>Azotobacter</i> , <i>Rhizobium</i> . <i>Cyanobacteria</i> ., <i>Nostoc</i> .
II	Nitrogenous Biofertilizers: Bacteria - Isolation and purification of <i>Azotobacter</i> , mass multiplication <i>Azotobacter</i> , formulation of inoculum of <i>Azotobacter</i> . Methods of application of <i>Azotobacter</i> inoculants. Isolation and purification of <i>Rhizobium</i> , mass multiplication and inoculum production of <i>Rhizobium</i> , Methods of application of <i>Rhizobium</i> inoculants.
III	Isolation and purification of Cyanobacteria- Mass multiplication of cyanobacterial bioinoculants - Trough or Tank method, Pit method, Field method; Methods of application of cyanobacterial inoculum. <i>Azolla</i> - mass cultivation and application in rice fields.
IV	Biofertilization processes-Decomposition of organic matter and soil fertility and vermicomposting.
V	Biofertilizers - Storage, shelf life, quality control and marketing.
Learning outcomes: After completion of the course students should be able to understand the cultivation methods for the production of different types of biofertilizers and their benefits.	
Practical: 1. Isolation and identification different types of microorganisms used as bio-fertilizers. 2. Mass Cultivation of <i>Azotobacter</i> . 3. Mass cultivation of <i>Nostoc</i> .	
Assignments: 1. Biofertilizers cultivated in India 2. Environmental benefits of biofertilizers. 3. Agricultural benefits of biofertilizers. 4. <i>Azotobacter</i> as biofertilizer 5. <i>Rhizobium</i> as biofertilizer 6. <i>Cyanobacteria</i> as biofertilizer 7. <i>Azolla</i> as biofertilizer etc.	

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Environmental Law and Policy	
Course code: AEC-1/SEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
<p>Course description: Law and policy plays a major role in the conservation and management of natural resources as well as pollution control. This course intends to introduce the students to the vast field of Environmental Law and Policy. The course would be divided into three broad areas. The first part would cover the basic concepts and principles of Environmental Law. This would include judicial precedents, which now forms an essential part of environmental jurisprudence. The second part would be divided into specific introductory modules on forests and wild life including bio-diversity related laws; Air and Water related laws including mega projects and marine laws; and laws relating to hazardous substances. The third part would discuss the role of judiciary including the National Green Tribunal in protecting the environment.</p>	
<p>Course objectives:</p> <ol style="list-style-type: none"> To provide an overview of the law and policies relating to environment both at the national and international level. To critically analyse the implementation of these laws and the role of adjudicatory bodies in the field Of environment. 	
Course content:	
Unit	Topics
I	<p>Introduction: Environment: meaning and components Environment vs Development debates, trigger events, business and environmental law, a brief introduction to SDGs. Introduction to environmental laws in India; Constitutional provisions, an overview of the laws General principles in Environmental law: Precautionary principle; Polluter pays principle; Sustainable development; Public trust doctrine.</p>
II	<p>Forest, Wildlife and Biodiversity related laws: Evolution and Jurisprudence of Forest and Wildlife laws; Colonial forest policies; Forest policies after independence. Statutory framework on Forests, Wildlife and Biodiversity: IFA, 1927; WLPA, 1972; FCA, 1980; Biological Diversity Act, 2002; Forest Rights Act, 2006. Strategies for conservation–Dolphin, Tiger, Elephant, Rhino</p>
III	<p>Air and Water Laws National Water Policy Laws relating to prevention of pollution, access and management of water and institutional mechanism: Water Act, 1974; Water Cess Act, 1977, EPA, 1986. Pollution Control Boards Ground water and law Legal framework on Air pollution: Air Act, 1981; EPA, 1986 as amended to date including rules and notifications issued under it.</p>
IV	<p>Environment protection laws and large Projects Legal framework on environment protection-Environment Protection Act as the framework legislation–strength and weaknesses; EIA. Marine laws of India; Coastal zone regulations, Wetland conservation.</p>
V	<p>Judicial remedies and the role of National Green Tribunal Role of judiciary in environmental protection; Infrastructure projects and the Indian judiciary.</p>

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Learning outcomes:

On completion of this course, the students would:

1. Have a strong foundation to undertake specialized courses in the field of environmental laws and policy
2. Develop an inter-disciplinary approach to the issues relating to environment.

Assignments:

1. Environmental laws in India
2. Evolution and Jurisprudence of Forest and Wildlife laws
3. Legal framework on Air pollution
4. Biological Diversity law
5. Role of judiciary in environmental protection
6. Air Laws
7. Water Laws
8. Wetland conservation etc.

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title: : Tourism And Hospitality Management	
Course code: AEC-1/SEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: The course is designed to enable students to learn various components of tourism and hospitality industry like tour arrangements, transportation, hospitality and travel circuits. This course will enable students to earn required skills needed for self-employment and employment for others.	
Course objectives: The aim of the course is to provide elementary knowledge of tourism industry including transportation, hotel, destination and future scopes.	
Course content:	
Unit	Topics
I	Introduction: Overview of tourism industry. Concept of tourism. Why it is important to study tourism? Scope of tourism and its economic importance. Impact of Tourism.
II	Elements of Tourism: Attraction, accessibility, accommodation, tourism product, characteristics of tourism products, types of products and tourism. Hotel Industry, Hotel Chains, Departments of Hotel. Tourist Guide and Escort. Public Relation.
III	Tour operation: Travel Agency and Tour Operator, Travel related documents, Passport, Visa, currency regulations, custom, health regulations, baggage regulations etc.
IV	Transportation: Role of transportation industry in tourism, Indian railways and its special trains (Palace on Wheels, Royal orient), airlines operating in India and international. Kind of Taxi and bus/coach services available.
V	Travel circuits: Some popular and important tourism circuits in India (golden triangle, desert circuit, Buddhist circuit, sun and sand, back waters etc) and International circuits.
Learning outcomes: On completion of this course, the students would: 1. Have a strong foundation to undertake specialized courses in the field of tourism and hospitality Management 2. Gain training for self employment and generate employment for others.	
Assignments: Assignment will be based on Unit I, II, III, IV and V	

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Life and Communication Skill Development	
Course code: AEC-1/SEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: Acquisition of life skills will empower students to cope with the transitive interactions in personal and professional lives while in an age of communication the curriculum will equip students to develop expertise in the utilities of ICT in the transmission of knowledge.	
Course objectives: 1. To develop communication skill of students. 2. To develop writing skill of students. 3. To develop expertise in the utilities of ICT in the transmission of knowledge.	
Course content:	
Unit	Topics
I	Life Skills: Critical thinking, Aristotle's Law of Logic, Problem solving, Creative thinking
II	Inter personal Skills: Childhood Ethics, Coping with emotions and stress, Trustworthiness and empathy, Negotiating difference of opinions
III	Communication skills: What is Communication?, Listening Skills, Speaking Skills, Reading Skills, Writing Skills, Group Discussion and Personal Interview, Barriers to Communication
IV	Specialized Writing Skills: Official letters, Business letters, Personal letters, Writing agendas, Minutes, Reports, Writing CVs, Resume, Statement of Purpose, Sending applications through mail with attachments, Rapporteuring, Documentation
V	Information and Communication Technology (ICT) Literacy: Word processor, Excel, PageMaker, Pdf conversion, Preparing PowerPoint Presentation
Learning outcomes: After completion of the course students should be able to cope with the transitive interactions in personal and professional lives. The course will equip students to develop expertise in the utilities of ICT in the transmission of knowledge.	
Assignments: Assignment will be based on Unit I, II, III, IV and V	

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Skill Enhancement Course (SEC)
Ability Enhancement Course (AEC)
Yogic Sciences

Unit – 1*

BASIC CONCEPT OF YOGA

- 1. Introduction to Yoga :** Definitions of Yoga, Thinkers on yoga and their views - Patanjali, Gherand and; Goraksh; Karma Yoga, Bhakti Yoga and Gyan Yoga : Concept and Characteristics.
- 2. Raja Yoga :** Eight steps of Yoga; Description and significance of Yamas and Niyamas.
- 3. Asanas and Pranayams :** Methods, advantages and limitations; Concept of Prana and Nadis; The subtle body, Chakras.
- 4. Pratyahara and Dharana :** Significance and techniques; Pratyahara and Dharana – Yoga Nidra, Antar Mouna, Ajapa Jap:
- 5. Hath Yoga :** Shatkarmas- their methods, benefits and limitations
- 6. Body and Mind :** Body-mind relation; the conscious, subconscious and unconscious; Psychosomatic disorders.

UNIT - 2

APPLICATIONS OF YOGA

- 1. Yogic Lifestyle and Health :** Medical concept and definition of health, Causes of disease according to medical science and yoga; Basic instincts and their management through yoga;
- 2. Diet and Nutrition :** Medical and Yogic concept of diet; the three Gunas in relation to diet.
- 3. Effect of Yoga on body systems :** The Bones and Joints, Cardiovascular, Respiratory, Digestive, Nervous, Endocrinal and Excretory systems. Preventive, Promotive and curative effects of yoga.
- 4. Stress management :** Concept and types of stress, Effects of stress on body and mind, Yogic management techniques.
- 5. Social Health management :** Causes and effects of crime and substance abuse on society, Role of yoga as supporting and transforming agent.

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UNIT - 3 (Practical)

- (i) *Pawanmuktasana* - Part I, II and III
- (ii) *Relaxation asanas* – Shawasana, Adwasana, Makarasana, Matsyakridasana.
- (iii) *Meditative Asanas* – Padmasana, Siddhasana, Siddhayoniasana, Sukhasana.
- (iv) *Standing Asanas* – Tadasana, Tiryaktadasana, Katichakrasana, Dwikonasana, Trikonasana.
- (v) *Vajrasana series* – Vajrasana, Suptavajrasana, Singhasana, Shashankasana, Ustrasana, Vyaghrasana.
- (vi) *Forward Bending Asanas* - Pashchimottanasana, Janushirasana.
- (vii) *Backward Bending Asanas* – Bhujangasana, Tiryakbhujangasana, Shalabhasana, Dhanurasana, Chakrasana, Gomukhasana, Kandhrasana

UNIT - 4 (Practical)

- (i) *Gatyatmak Asanas* – Suryanamaskar, Shankhprakshalana Asanas.
- (ii) *Inverted Asanas* – Bhumipadmastasana, Sarwanganasana, Halasana.
- (iii) *Pranayama* - Prepranayama Practices, Yogic Breathing, Nadishodhan upto stage III, Kapalbhata, Bhastrika, Bhramari
- (iv) *Mudras and Kriyas* - Gyan, Chin, Shambhawi, Nasikagra, Ashwini, Khechari, Agnisar
- (v) *Bandhas* - Jalandhar, Moola, Uddiyana, Mahabandha
- (vi) *Shatkarmas* - Kunjal, Jalneti, Laghooshankhprakashana, Trataka.
- (vii) *Pratyahara* -Yoganidra, Antarmauna, Ajapa.

UNIT - 5

Assignment/Vocational Training

(*1 unit = 1 credit)

Unit 1+2 = 2x10 = 20 hrs

Units 3+4 (Practicals)= 2x20 = 40 hrs

Unit 5 (Vocational Training)= 10x2= 20 hours

Total Programme = 20+40+20= 80 hours


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SYLLABUS
FOR
M.Sc. Chemistry
Semester (Ist, IInd, IIIrd and IVth)
(CBCS- Based)

Effective from session 2018 -20 Onwards



University Department of Chemistry
B. R. Ambedkar Bihar University,
Muzaffarpur-842001

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27/3/19

CBCS-based syllabus for M.Sc.Chemistry (2years) Programme

General Information:-

- (1) It is two years Master Degree Programme
- (2) There shall be four semester to complete programme. i.e. 1st, 2nd, 3rd and 4th semester
- (3) Each semester shall consist of 15 weeks of academic work equivalent to 90 actual teaching days.
- (4) This programme will have three types of courses, i.e. Compulsory Courses, Core courses and Elective courses.

Core course - The core courses are those courses whose knowledge is deemed essential for the students registered for a particular Master's degree programme.

Elective course - The elective course can be chosen from a pool of papers in IInd and IVth semester.

- (5) Each course will have 100 marks in full and divided as 70 marks for End-Semester Exam and 30 marks for Internal Assessment Work except in AEC, AECC-1, AECC-2 and practical papers. Internal assessment will be in two internal exams of 10 marks each, 5 marks for seminar/internal project and 5 marks for attendance/discipline.
- (6) In practical papers the distribution of marks in CIA will be same as prescribed for term end semester practical papers.
- (7) A student in fourth semester can choose a generic paper or CC-5 paper of any other subject of the faculty as DSE.

Credits- A unit by which the course work is measured. It determines the number of hours of instruction required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week.

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M. Sc. Chemistry (Two years Course)

CHOICE BASED CREDIT SYSTEM

Course Structure

M.Sc. 1st Semester

Serial No.	Courses	Code	Description	Credits	Max. Marks (100)
1	Core Course I	MSCOHE CC-1	Inorganic Chemistry -1	5	100
2	Core Course II	MSCOHE CC-2	Physical Chemistry -1	5	100
3	Core Course III	MSCOHE CC-3	Organic Chemistry -1	5	100
4	Core Course IV	MSCOHE CC-4	Practical (Physical)	5	50+50
5	AEEC-1		Environmental Sustainability and Swachhha Bharat Abhiyan Activities	3+2	50+50

M. Sc. IInd Semester

Serial No.	Courses	Code	Description	Credits	Max. Marks (100)
6	Core Course V	MSCOHE CC-5	Advances in Chemistry	5	100
7	Core Course VI	MSCOHE CC-6	Inorganic Chemistry-II	5	100
8	Core Course VII	MSCOHE CC-7	Physical Chemistry-II	5	100
9	Core Course VIII	MSCOHE CC-8	Organic Chemistry-II	5	100
10	Core Course IX	MSCOHE CC-9	Practical (Organic)	5	50+50
11	AEC-1			5	50+50

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M. Sc. IIIrd Semester

Serial No.	Courses	Code	Description	Credits	Max. Marks (100)
12	Core Course X	MSCOHE CC-10	Application of Spectroscopy	5	100
13	Core Course XI	MSCOHE CC-11	Bio-inorganic Chemistry	5	100
14	Core Course XII	MSCOHE CC-12	Environmental Chemistry and Green Chemistry	5	100
15	Core Course XIII	MSCOHE CC-13	Bio- Organic Chemistry	5	100
16	Core Course XIV	MSCOHE CC-14	Practical (Inorganic Chemistry)	5	50+50
17	AECC-2		Human values and professional ethics & gender sensitization	3+2	50+50

M. Sc. IVth Semester

Serial No.	Courses	Code	Description	Credits	Max. Marks (100)
18	Elective Course-1	MSCOHE EC-1a	Inorganic Chemistry Special	5	100
19	Elective Course-1	MSCOHE EC-1b	Physical Chemistry Special	5	100
20	Elective Course-1	MSCOHE EC-1c	Organic Chemistry Special	5	100
21	Elective Course-1	MSCOHE EC-2a	Inorganic Chemistry Special Practical	5	50+50
22	Elective Course-1	MSCOHE EC-2b	Physical Chemistry Special Practical	5	50+50
23	Elective Course-1	MSCOHE EC-2c	Organic Chemistry Special Practical	5	50+50
24	DSE-1 or GE-1			5	100

Candidates should choose one among the following groups- 1a & 2a or 1b & 2b or 1c & 2c

Semester -I
Core Course -I
Inorganic I

Full Marks -70

Credits-5

Bonding and Stereochemistry

Unit-I (a) VSEPR theory, Walsh diagram (triatomic molecules), $dn - \pi$ bonding, Bent rule and energetic of hybridization.

(b) M.O. diagram for hetero- nuclear di- and triatomic molecules. Bonding in Boranes, carboranes, Wades rule Anti ferromagnetic coupling.

Unit-II **Magneto chemistry**

e-e interaction, Term Symbols, spin orbit coupling Quenching of orbital contribution in metal complexes. Derivation of expression with small and large multiple width. Anomalous magnetic moments, magnetic properties of inner transition elements.

Unit-III **Metal- Ligand Equilibria in Solution**

Stepwise and overall formation constants and their interaction, trends in stepwise constants. Factors affecting the stability of metal complexes with reference to the nature of metal ion and ligand, chelate effect and its thermodynamic origin. Determination of formation constants by pH metery and spectrophotometry.

Unit-IV **Reaction Mechanism of Transition metal complexes.**

Inert and labile complexes, kinetic application of VBT and CFT, kinetics of octahedral substitution, acid hydrolysis, base hydrolysis, CB mechanism, evidences of CB mechanism, Anation reaction, reaction without M-L bond cleavage, substitution reactions in square planar complexes, The trans-effect, Theories of trans-effect, Electron transfer reactions-inner and outer sphere mechanism. Marcus-Hush theory.

Unit-V

Isopoly and Heteropolyacids.
Isopoly and Heteropoly Acids and salts, Isopoly and Heteropoly acids and salts of Mo and W. structure of isopoly and heteropoly anions.

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Books Recommended :

1. Concise Inorganic Chemistry- J.D. Lee
2. Inorganic Chemistry- T. Moeller.
3. Modern Aspects of Inorganic chemistry- H.J. Emeleus and A.G. Sharpe
4. Introduction to ligand field- B.N. Figgis
5. Inorganic Reaction Mechanism- Basalo and Pearson
6. Chemical bonding- O.P. Agrawal/ Coulson
7. Structural Principles in Inorganic Chemistry-W.E. Addison
8. Introduction the Magneto Chemistry- A. Earshasw
9. Principle of Inorganic Chemistry- James Hubey.

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Semester-I
Core Course -II
Physical Chemistry-I

Full Marks -70

Credits-5

Unit-I Macromolecules

Types of polymers, Kinetics and mechanisms of polymerization, Molecular mass-number and mass average molecular mass, determination of molecular mass by osmometry, viscosity and light scattering method.

Unit-II Electro Chemistry

- (i) Electrode potential in terms of chemical Potential and activity.
- (ii) Debye Huckel theory of conductance of electrolytic solution, its application and limitation.
- (iii) Quantitative treatment of Debye Huckel Limiting law and its modification for finite size ions, effect of ion solvent interaction on activity coefficients, Debye Huckel Onsager equation.
- (iv) Butler-Volmer equation under equilibrium and non equilibrium Exchange current density, Tafel Plot.

Unit-III Chemical Dynamics

- (a) Mechanism and Dynamics of consecutive and opposing reactions.
- (b) Activated complex theory of Uni-molecular reaction.
- (c) Mechanism and Dynamics of photolysis of acetaldehyde and photo dimerisation of Anthracene, Polymerization and Auto oxidation reaction. *Study of fast reaction by flow method and relaxation method.*

Unit-IV Chemical Thermodynamics

- (a) Partial molar properties in ideal mixture, Chemical Potential, its determination and variation with temperature and pressure, Gibbs Duhem equation.
- (b) Fugacity and activity, variation with 'T' and 'P', determination of Fugacity of a gas mixture, Duhem- Margules equation and its application.

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Unit-V Statistical Thermodynamics

Ensembles, Thermodynamic probability, Boltzman Distribution Law, Boltzman Planck Equation, Partition function and its significance, Relationship with thermodynamic functions. Translational, Rotational, Vibrational and Electronic partition function. Its application in the case of monatomic and diatomic molecules, Sakure-Tetrode Equation.

Books Suggested: Recommended

1. Physical Chemistry : P.W. Atkins(ELBS)
2. Comprehensive Physical Chemistry : Hemant Snehil
3. Theoretical Physical Chemistry : Glastone.
4. Physical Chemistry : M.G. Barrow.
5. Modern Electrochemistry : JOM Bakris and A.K.N. Reddy
6. Text Book of Polymer Science : F.W. Billmayer jr.
7. Advanced Physical Chemistry : Gurdeep Raj

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Semester-I
Core Course -III
Organic Chemistry-I

Full Marks -70

Credits-5

Unit-I Nature of Bonding in Organic Molecules

Delocalized chemical bonding-conjugation, cross conjugation, resonance, hyperconjugation, tautomerism. Aromaticity in benzenoid and non- benzenoid compounds, alternant and non-alternant hydrocarbons, Huckel's rule, energy level of molecular orbitals, annulenes, antiaromaticity, homo- aromaticity, PMO approach.

Unit-II Stereochemistry:

Chirality, elements of symmetry, molecules with more than one chiral centre, diastereomerism. Determination of relative and absolute configuration, Methods of resolution, optical purity, prochirality, enantiotopic and diastereotopic atoms, groups and faces, asymmetric synthesis, conformational analysis of cycloalkanes (six membered rings), decalins, Effect of conformation on reactivity, optical activity in absence of chiral carbon [biphenyls, allenes and spiranes], chirality due to helical shape, stereospecific and stereoselective synthesis. stability and reactivity of carbocations.

Unit-III Reaction Mechanism: Structure and Reactivity:

Types of reactions, kinetic and thermodynamic control, Hammond's postulate, Curtin-H ammet principle. Potential energy diagrams, transition states and intermediates, methods of determining mechanisms, isotope effects. Generation, structure, carbanions, free radicals, carbenes and nitrenes. Effect of structure on reactivity. The Hammett equation and linear free energy relationship. substituent and reaction constants. Taft equation.

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Unit-IV Aliphatic Nucleophilic Substitution:

The SN^2 , SN^1 , mixed SN^1 and SN^2 , SN^1 and SET mechanisms. The neighbouring group mechanisms, neighbouring group participation by π and σ bonds anchimeric assistance. Classical and nonclassical carbocations, phenonium ions, Reactivity- effects of substrate structure, attacking nucleophile, leaving group and reaction medium. Ambident nucleophiles and regioselectivity. Nucleophilic substitution at an allylic, aliphatic trigonal and a vinylic carbon.

Aromatic Nucleophilic Substitution: The $ArSN^1$, $ArSN^2$, $ipso$ attack Benzyne and SRN^1 mechanisms. Reactivity-effect of substrate structure, leaving group and attacking nucleophile. The Von-Richter, Sommelet - Hauser, and Smiles rearrangements.

Unit-V Aliphatic Electrophilic Substitution:

Bimolecular mechanisms - SE^2 and SE^1 . Electrophilic substitution accompanied by double bond shifts. Effect of substrates, leaving group and the solvent polarity on the reactivity.

Elimination Reactions: Mechanism and orientation in pyrolytic elimination. Mechanism and application of Cope elimination, Chugaev reaction, Peterson reaction.

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Books Recommendation:

1. Advanced Organic Chemistry- Reactions Mechanism and Structure by Jerry March.
2. A guide Book to Mechanism in Organic Chemistry by Peter Sykes.
3. Organic Chemistry by R.T. Morrison and R.N. Boyd.
4. Advanced Organic Chemistry by Jagdamba Singh and L.D.S. Yadav.
5. Reaction Mechanism in Organic Chemistry by S.M. Mukherji and S.P. Singh.
6. Stereochemistry of Organic Compounds by D. Nasipuri.
7. Stereochemistry of Organic Compounds by P.S. Kalsi.
8. Advanced Organic Chemistry by F.A. Carey and R.J. Subdbrg.
9. Organic Synthesis by Jagdamba Singh, L.D.S. Yadav and Jaya singh.

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Semester-I
Practical (Physical Chemistry)
(Core Course -IV)

Full Marks -50

Duration of Exam 6 hrs.

Credits-5

Any one experiment-

30 Marks

1. Water equivalent of calorimeter and determination of
 - (i) Heat of solution of potassium nitrate
 - (ii) Heat of neutralization of strong acid and strong base.
 - (iii) Basicity of polybasic acids.
2. Determination of rate constant of hydrolysis of methyl acetate in acid medium.
3. The study of saponification of ethyl acetate by sodium hydroxide and determination of rate constant.
4. To determine the distribution coefficient of
 - (i) Acetic acid
 - (ii) Benzoic acidbetween water and benzene by partition method.
5. Determination of specific and molar rotation of sucrose in different concentrations and to determine the concentration of given solution.
6. Determination of rate constant of inversion of cane sugar^{using polarimeter.}
7. i) Determination of Dissociation constant of acetic acid, by conductometric titration.
 - ii) Solubility product of sparingly soluble salt.

Viva-voce-15

Note books-5

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Semester-I

AECC-1

Environmental Sustainability and Swachchha Bharat Abhiyan Activities

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Unit I: Nuclear Chemistry
(a) Discovery of Radioactivity, Alpha, Beta, Gamma, X-rays and their Properties
(b) Radioisotopes and their uses in medicine, agriculture, industry and research

Unit II: Chemical Equilibrium
(a) Equilibrium constants, Le Chatelier's principle, applications
(b) Thermodynamics, Enthalpy, Entropy

Unit III: Chemical Kinetics
(a) Rate of reaction, order, molecularity, rate laws, Arrhenius equation
(b) Catalysis, reaction mechanism

Unit IV: Solid State Chemistry
(a) Crystal structure, packing, voids, coordination number, lattice energy
(b) Defects in crystals, conductivity, semiconductors

Unit V: Industrial Applications
(a) Chemistry of elements: Sodium, Magnesium, Aluminium, Iron, Copper, Zinc
(b) Chemistry of compounds: Sulphuric acid, Ammonia, Nitric acid, Hydrogen peroxide

Unit VI: Waste Management
(a) Hazardous waste management
(b) Solid waste management
(c) Recycling of plastic, covering, e-waste, drinking water, effluents and wastewater treatment



Semester-II
Core Course-V
Advances in Chemistry

Full Marks -70

Credits-5

Unit-I Nuclear Chemistry

- (a) Shell model, Liquid drop Model, Nuclear Reactions and their Types. Nuclear Reactions Cross-section.
- (b) Application of radio isotopes, tracer techniques, Neutron activation analysis, isotope dilution method.

Unit-II Chemistry of Nanomaterials

Definition, sources, examples, Bottom-up Method of synthesis, Characterizations, and applications

Unit-III Solid state Chemistry

Conductor, Semiconductor, and superconductor; Theory and Application

Unit-IV Industrial Application of Chemistry

Chemistry of Cement, Paper and Pulp, and Petroleum

Unit-V Waste Management

Nuclear waste management,

e-waste management.

Recycling of plastic: (sorting, washing, shredding, identification and classification, extruding.) X-delete.

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Books recommended:

1. Industrial pollution: by Alka Gupta.
2. Solid State Chemistry: by Smut and Moore
3. Nuclear Chemistry : Sharon and Sharon
4. Solid state Chemistry and its application : Anthony R West
5. The Chemistry of Nanomaterials : CNR Rao, A. Muller & A.K. Cheetham.
6. Nanomaterials and their application : Zheny Hussain Khan
Chinnai -

Semester-II
Core Course-VI
Inorganic Chemistry II

Full Marks -70

Credits-5

- Unit-I Bonding in coordination Compounds:** Effect of distortion on d- orbital energy level. John- Teller effect, spectro chemical series. Thermo dynamic effect of crystal field Theory. Site selection in Normal and inverse spinel structure. Calculation of hydration energy and lattice energy of complexes. Evidences in support of covalent bonding in Transition metal complexes. M.O. Theory of ML_4 with σ and π -bonding ligands using symmetry arguments. Magnetic properties and charge transfer spectra on the basis of M.O. model.
- Unit-II Electronic Spectra of Transition Metal Complexes.**
Spectroscopic ground states, correlation and spin-orbit coupling in free ions for 1^{st} series of transition metals, Orgel and Tanabe-Sugano diagrams for transition metal complexes (d^1 - d^9 states), calculation of Dq , B and β parameters. Structural evidence from electronic spectrum, Spectrochemical and nephelauxetic series, charge transfer spectra, electronic spectra of molecular addition compounds.
- Unit-III Symmetry in Chemistry.**
Symmetry elements and symmetry operations, definition of groups, subgroup, conjugate and class. Point symmetry group. Requirements of a mathematical group, multiplication table for C_{2v} , C_{3v} .
- Unit-IV Group theory in Chemistry.**
Representation of group by matrices. Working out representation of C_{2v} , C_{3v} point groups. Character of a representation. The great orthogonality theorem (without proof) and its importance in derivation of character table. Construction of character table for C_{2v} and C_{3v} point group.
- Unit-V Metal π -complexes.**
Metal carbonyls, structure and bonding, vibrational spectra of metal carbonyls for bonding and structural elucidation. Preparation, bonding, Structure and important reaction of transition metal nitrosyls.

Dinitrogen, tertiary phosphines as ligands. Metal Carbonyl clusters- Low
Nuclear Carbonyl clusters Total electron count (TEC)

Books Recommended

1. Advanced Inorganic Chemistry- F.A. Cotton and G. Wilkinson.
2. Inorganic Chemistry- Principles of Structure and reactivity - J.E. Huheey
3. Concise Inorganic Chemistry- J.D. Lee
4. Group Theory and its chemical applications- F.A. Cotton
5. Group Theory and its chemical applications- P.K. Bhattacharya

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Semester-II
Core Course-VII
Physical Chemistry II

Full Marks -70

Credits-5

Unit-I Introduction to quantum mechanics.

- (i) Postulates of quantum mechanics, Angular momentum and Linear Operator
- (ii) Hermitian operators, properties of operators.
- (iii) Theorems of operators.

Unit-II Exactly soluble system.

- (i) Linear Harmonic oscillator, Harmonic Vibration Hermite differential equation and its solution through recursion relation polynomial.
- (ii) H-like atoms, separation of r, θ, ϕ equation. Laguerre and associated Laguerre Polynomial. Legendre polynomial equation and their solution.

Unit-III Approximate Method.

Variation method, Secular equation, Slater determinant, Perturbation method, first order perturbation Application to He-atom. Symmetric and antisymmetric wave functions.

Unit-IV Huckel Molecular Orbital Theory.

Huckel theory of conjugated systems, bond order and charge density its calculation. Application to ethylene, butadiene, allyl and benzene

Unit-V Chemical Bonding

LCAO-MO theory, application of LCAO-MO theory to H_2^+ ion and H_2 molecule

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Recommended

Book Suggested:-

1. Quantum chemistry : I.R. Lavine Prentice Hall
2. Quantum chemistry : Pillar
3. Quantum chemistry : R.K. Prasad
4. Quantum chemistry : Satya Prakash Swati Saluja
5. Solid State Chemistry : D.K. Chakrabarty, New Age International
6. New Direction Solid State Chemistry : C.N.R. Rao & J. Gopal
7. Introduction to quantum Chemistry : A.K. Chandra, Tata

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Semester-II
Core Course-VIII
Organic Chemistry II

Full Marks -70

Credits-5

Unit-I Addition to Carbon-Carbon Multiple Bonds:

Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, regio- and chemoselectivity, orientation and reactivity. Addition to cyclopropane ring. Hydroboration Michael reaction. Sharpless asymmetric epoxidation.

Free Radical Reactions

Allylic halogenations (NBS), oxidation of aldehydes to carboxylic acids auto-oxidation, coupling of alkynes, Free radical rearrangement Hunsdiecker reaction.

Unit-II Photochemistry of carbonyl compounds.

Photochemistry of enones, hydrogen abstraction. Rearrangements of α,β unsaturated ketones and cyclohexadienones, photochemistry of p-benzoquinones.

Photochemistry of unsaturated system

Olefins, cis-trans isomerisation, dimerisation hydrogen abstraction and additions. Acetylenes-dimerisation, dienes-photochemistry of 1, 3-butadiene [2+2] additions leading to cage structures, photochemistry of cyclohexadienes, photochemistry of aromatic compounds-excited state of benzene and its 1,2 and 1,3-shifts, Photo-Fries rearrangement, Photo-Fries reaction of amides, photosubstitution reaction of benzene derivatives, Photolysis of nitrile esters and Barton reaction.

Unit-III Pericyclic Reactions

Molecular orbital symmetry, Frontier orbitals of ethylene, 1, 3-butadiene, 1,3,5-hexatriene and allyl system, Classification of pericyclic reactions, Woodward-Hoffmann correlation diagrams, FMO and PMO approach, Electrocyclic reactions-conrotatory and disrotatory motions, $4n$, $4n+2$ and allyl systems. Cycloadditions-antrafacial and suprafacial additions, $4n$ and $4n+2$ systems, $2+2$ addition of ketenes, 1,3-dipolar cycloadditions and cheletropic reactions.

Sigmatropic rearrangement

Suprafacial and antarafacial shift of H, sigmatropic shifts involving carbon moieties, retention and inversion of configuration, (3,3) and (5,5) sigmatropic rearrangements detailed treatment of Claisen and Cope-rearrangements. Aza-Cope rearrangements. Introduction to Ene reactions. Simple problems on pericyclic reactions.

Unit-IV Carbohydrate

Conformation of monosaccharides and important derivatives of monosaccharide- glycosides, deoxysugar, aminosugar. Structure determination and chemical synthesis of sucrose, and maltose.

Unit-V Amino acids, peptides and proteins

Chemical and enzymatic hydrolysis of proteins, amino acid sequencing. Secondary structure of protein, force responsible for secondary structure of protein, α -helix, β -sheet. Super secondary structure, tertiary structure of proteins folding.

~~Unit-V Amino acids, peptides and proteins~~

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Semester-II
Core Course -IX
Practical (Organic Chemistry)

Full Marks-50

Duration of Exam 6 hrs.

Credits-5

1. Quantitative Analysis

Separation and identification of organic compounds in binary mixtures by chemical tests and preparation of their derivatives. 15Marks

2. Organic Synthesis via two steps preparation

15 Marks

- a. β -Nitroaniline from acetanilide.
- b. β -Bromoaniline from acetanilide
- c. β -Anthranilic acid from phthalic anhydride.
- d. β -Bromoacetanilide from aniline.
- e. β -Nitroacetanilide from aniline.
- f. β -Aminoazo benzene from aniline.

3. Viva Voce

15 Marks

4. Note Book

05 Marks

Books Recommendations:

1. Advanced Practical Chemistry by Jagdamba Singh, L.D.S Yadav and Jaya Singh
2. Systematic Qualitative Organic Analysis by H. Middleton.
3. Handbook of Organic Analysis-Qualitative and Quantitative by H. Clark.
4. Vogel's Textbook of Practical Organic Chemistry by A.R. Tatchell.

AR.S
29/3/19

Semester-II
AEC-1

Principles & Applications of Spectroscopy

Total Marks: 70

Examination

Unit-1: Rotational Spectroscopy

Qualitative and quantitative analysis using rotational spectroscopy. Classification of diatomic and polyatomic molecules. Selection rules and applications. Effect of centrifugal distortion and spin-rotation coupling on rotational spectra.

AR 10
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Unit II (A): Vibrational Spectroscopy

Normal coordinates. Harmonic and anharmonic oscillators. Selection rules. Overtones. Fermi resonance. Anharmonicity. Intensity of vibrational transitions. Raman and infrared spectroscopy.



Unit III: Photoacoustic Spectroscopy

Photoacoustic effect. Photoacoustic cell. Applications of photoacoustic spectroscopy. Photoacoustic Fourier transform spectroscopy. Photoacoustic detection of trace gases. Comparison of photoacoustic spectroscopy with other spectroscopic techniques. Applications of photoacoustic spectroscopy in environmental monitoring, food safety, and medical diagnostics. Photoacoustic spectroscopy in the study of molecular dynamics and chemical reactions.

Unit-4: Raman Scattering Spectroscopy

Raman effect. Classical and quantum mechanical treatment of Raman scattering. Stokes and anti-Stokes lines. Resonance Raman scattering. Applications of Raman spectroscopy in the study of molecular structure, chemical reactions, and material science.

Semester -III
Core Course-X
Principles & Applications of Spectroscopy

Full Marks-70

Credits-5

Unit-I Rotational Spectroscopy

Quantization of rotational energy and interactions of radiation with rotators. Classification of rotators; rigid rotator and Non-rigid rotator linear, symmetric and asymmetric rotators, isotopic effect, stark effect, effect of nuclear spin, and electron spin on rotational spectra, Bond length calculations.

Unit-II (A) Vibrational Spectroscopy

Harmonic oscillator model, harmonic and anharmonic vibration, Normal vibration, Factors affecting vibration frequencies, vibrating rotators, P,Q,R. Branches, overtones, anharmonicity constant, Raman effect, stokes and antistokes lines, selection rules for IR and Raman spectra, Principal of mutual exclusion. Polarization of Raman Lines.

Unit-III Photoelectron Spectroscopy

Basic principles of photoelectric effect, ionization process, Adiabatic and vertical ionization energy, PESOS(UV-PES) and PESIS (XPES or ESCA). Chemical shift in ESCA. Chemical information from ESCA. Instrument and Techniques of Photoelectron Spectroscopy. Atomic electron spectra of inert gases. Comparison of Photo-electron spectra of Ar, Kr, Xe. Photo-electron spectra of H_2 , O_2 , N_2 and NO, HBr. XPES or ESCA of Furan, Pyrrole and Thiophene. Zero kinetic energy, Photoelectron Spectroscopy. Auger Spectroscopy(AES), Scanning Auger Microprobes(SAM). Microscopic Technique: SEM, TEM, STEM, Focus ion beam Spectroscopy(FIB). Electron Microscope Koopman's theorem.

Unit-IV Magnetic Resonance Spectroscopy

Nuclear magnetic resonance, chemical shift of factors controlling its value spin-spin interaction and factors affecting its value. Spin Lattice relaxation and quantitative treatment of relaxation, selection rule and relative intensities of line. Principle of ESR spectroscopy, presentation of spectrum, theory of hyperfine, interaction, Isotopic g and Δ values.

Nuclear quadrupole resonance spectroscopy. Basic Concepts of NQR, Electric field gradient, NQR frequency for N^{14} ($I=1$) B^{11} ($I=3/2$), ^{27}Al ($I=5/2$), Nuclear quadrupole coupling constant.

Unit-V Applications of Spectroscopy

(A) UV-Visible Spectroscopy

Spectra of carbonyl compounds and conjugated polyenes, Woodward-Fisher rules, aromatic and heterocyclic compounds, and steric effect in diphenyls, quantitative determinations.

(B) Vibrational Spectroscopy

Organic effect of conjugation, resonance inductive effect, ring strain and hydrogen bonding on group frequencies and band shapes.

Inorganic: Changes with vibrational frequencies upon coordination, cases of linkage isomers, I.R. and Raman active form of vibrational geometry of AB_2 , AB_3 , AB_4 , and AB_5 . Hydrogen bonding.

(C) PMR and CMR Spectroscopy

Chemical shifts value and correlation for proton-bonded with carbon. Effect of chemical exchange on line width, coupling constants, Interpretation of PMR and CMR spectra of organic compounds. Double resonance application of ^{19}F and ^{31}P spectra of inorganic compounds.

- (D) Mass Spectrometry Ion production and Fragmentation, molecular ion peak, Metastable peak, Mc. Lafferty rearrangement. Examples of mass spectra of organic compounds.

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Book Suggested Recommended:

1. Physical Methods for Chemistry by R.S. Drago, Saunders Company.
2. Structural Methods in Inorganic Chemistry by E.A.V. Ebsworth, D.W.H. Rankin and S. Cradock, ELBS.
3. Infrared and Raman Spectra: Inorganic and Co-ordination pounds by K. Nakamoto, Wiley.
4. Progress in Inorganic Chemistry Vol. 8, ed by F.A. Cotton, Vol. 15, ed, S.J. Lipard, Wiley.
5. Inorganic Electronic Spectroscopy by A.P.B. Lever, Elsevier.
6. Organic Spectroscopy by Jagdamba Singh and Jaya Singh.
7. Spectroscopy of Organic Compounds by P S Kalsi.
8. Spectrometric identification of organic compounds by Silverstein.

A.P. S. /
27/9/17



Semester -III
Core Course-XI
Bio-Inorganic Chemistry

Full Marks-70

Credits-5

Unit-I Metal Ions in Biological Systems

Essential and trace metals. Na⁺/K⁺ Pump, Role of metal ions in biological processes Toxicity of heavy metals and their detoxification, role of Selenium in Biological systems with reference to its essentiality and toxicity, mechanism of metal ion induced toxicity, interaction between orally administered drugs and metal ions in gut.

Unit-II Bioenergetics and ATP Cycle

DNA polymerization, glucose storage, metal complexes in transmission of energy, chlorophylls, photosystem-I and photosystem-II in cleavage of water, Model system.

Unit-III Transport and Storage of Dioxygen

Heme proteins and oxygen uptake, structure and function of haemoglobin, myoglobin, hemocyanins and hemerythrin, model synthetic complexes of iron, cobalt and copper.

Unit-IV Electron Transfer in Biology

Structure and function of metalloproteins in electron transport processes- cytochromes and iron-sulphur proteins, synthetic models.

Nitrogenase

Biological nitrogen fixation, molybdenum nitrogenase, spectroscopic and other evidence, other nitrogenases model system.

Unit-V Metals in Enzyme and Medicine

The biochemistry of zinc, cobalt, nickel and molybdenum: Transport of Zinc, carbonic anhydrase, carboxypeptidase, alcohol dehydrogenase, Adenosyl cobalamine as a coenzyme. Ribonucleotide reductase, Methylcobalamine and cyano cobalamine as a co-factor, Nickel in urease, Hydrogenase, Molybdenum hydroxylase, Xanthine oxidase, Sulphite oxidase, nitrate reductase.

Biochemical basis of essential metal deficient diseases, Iron copper and Zinc deficiency and their therapies, Carcinogens and carcinostatic agent, Zinc in tumors growth and inhibital anticancer activity and Mechanism of platinum, Rhodium, copper and Gold complexes.

Books Recommend:

1. Principles of Bio-inorganic Chemistry - S.J Lippard and J.M Berg, University Science Books.
2. Bio-inorganic Chemistry- I. Bertini, H.B. Gray, S.J. Lippard and J.S. Valentine University Science Books
3. Progress in Inorganic Chemistry, Vols 18 and 35 Ed. J.J. - Lippard, Wiley.

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Unit-I Environment

Introduction, Composition of atmosphere, vertical temperature, heat budget of the earth atmospheric system, vertical stability atmosphere, Biogeochemical cycles of C, N, P, S and O, bio distribution of elements.

Unit-II Hydrosphere

Chemicals compositions of water bodies-lakes, streams, rivers, and wet lands etc. hydrological cycle, Aquatic Pollution - inorganic, organic, pesticide, agricultural, industrial and sewage, detergents, oil spills and oil pollutants. Water quality parameters - dissolved oxygen, biochemical oxygen demand (BOD), Solids, metals, content of chloride, sulphate, phosphate, nitrate and microorganism. Water quality standards.

Analytical methods for measuring BOD, DO, COD, F, Oils, Metals (As, Cd, Cr, Hg, Pd, Se, etc.), Residual chloride and chlorine demand, Purification and treatment of waste water.

Unit-III Atmosphere

Chemical composition of atmosphere-particles, ions and radical and their formation. Chemical and photochemical reactions in atmosphere, smog formation, oxides of N, C, S, O and their effects, pollution by chemicals, petroleum, minerals, chlorofluorocarbons (CFC's). Greenhouse effect, acid rain, air pollution controls and their chemistry. Analytical methods for measuring air pollutants. Continuous monitoring instruments.

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Unit-IV Green Chemistry: Definition and Objective

The twelve principles of Green Chemistry, atom economy in chemical synthesis, important techniques employed in practice of Green Chemistry, Application of microwave irradiation and ultrasound in chemical reactions. Use of renewable raw materials and biosynthesis, organic waste management, use of safer reagents green solvents and green catalysts.

Unit-IV Green Chemistry: Real Applications

Replacement of CFC and hydrocarbon blowing agents with environmental friendly blowing agent CO₂ in the production of polystyrene. Replacement of Ozone depleting and Smog producing solvents by surfactant assisted liquid or supercritical carbon dioxide for cleaning in manufacture of ICs and Computer chips.

Books Suggested

1. Environmental Chemistry and Green Chemistry, Asin Kr Das, Books and Allied (P) Ltd. Kolkata.
2. Environmental Chemistry, H. Kaur, Pragati Prakashan.
3. Environmental Chemistry S.F. Manahan, Lewis Publishers
4. Environmental Chemistry, A.K. Dey, Wiley Eastern.
5. Environmental Chemistry, C. Baird, W.H. Freeman.

AR 2/10
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Semester-III
Core Course-XIII
(Bio- Organic Chemistry)

Full Marks-70

Credits-5

Unit-I Enzymes

Basic considerations, Proximity effects and Molecular adaption. Introduction and historical perspective, chemical and biological catalysis, remarkable properties of enzymes like catalytic power, specificity extraction and purification. Fischer's lock and key and Koshland's induced fit hypothesis, concept and identification of active site by the use of inhibitors. Affinity labeling and enzyme modification by site-directed mutagenesis. Enzyme kinetics, Michaelis-Menten and Lineweave- Burk plots. Reversible and irreversible inhibition.

Unit-II Mechanism of Enzyme Action

Transition-state theory, orientation and steric effect, acid-base catalysis, covalent catalysis, strain or distortion, Examples of some typical enzyme mechanisms for chymotrypsin, lysozyme and carboxypeptidase A.

Unit-III Reactions Catalysed by Enzymes

Nucleophilic displacement on phosphorus atom, multiple displacement reactions and the coupling of ATP cleavage to endergonic processes. Transfer of sulphate, addition and elimination reaction. Enolic intermediates in isomerization reactions. P-cleavage and condensation, some isomerization and rearrangement reactions. Enzyme catalyzed carboxylation and decarboxylation.

Unit-IV Co-Enzyme Chemistry

Cofactors as derived from vitamins, coenzymes, prosthetic groups, apoenzymes. Structure and biological functions of coenzyme A, thiamine pyrophosphate, pyridoxal phosphate, NAD, NADH, FMN.

FAD, Lipole acid, vitamin B12, Mechanisms of reactions catalyzed by the above cofactors.

Unit-V Bioenergetics and Protein Metabolism

Free energy and entropy change in biochemical reactions. Synthesis of ATP. ATP as biological currency. Calvin cycle kerb cycle, glycolysis and glycogenesis. Amino acid metabolism, urea cycle. Chemical basis of heredity. Replication of DNA. Translation and Transcription.

Books Recommend:

1. Understanding Enzymes- Trevor Palmer, Prentice Hall.
2. Enzyme Chemistry - Impact and Application, Ed.- Collin J. Suckling, Chapman and Hall.
3. Enzyme Mechanisms Ed- M.J Page and A. Williams, Royal Society of Chemistry.
4. Fundamentals of Enzymology- N.C. Price and L. Slovens, Oxford University Press.
5. Immobilized Enzymes- An Introduction and Applications in Biotechnology, Michael O. Trevan, John Wiley.
6. Enzymatic Reaction Mechanisms- C. Walsh, W.H. Freeman.
7. Enzyme structure and Mechanism- A. Fersht, W.H. Freeman.

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Semester-III
Core Course-XIV
Practical (Inorganic Chemistry)

Full Marks-50

Duration of Exam 6 hrs.

Credits-5

1. Quantitative analysis of two constituent ions of the following.
(a) Cu, Zn, (b) Fe, Ni (c) Ca, Mg (d) Al, Mg the cations
Mg²⁺, Ca²⁺ and Al³⁺ can be estimated using EDTA. 15
2. Green methods of preparation of the following complexes and their study
by IR, electronic spectra and T.G.A. 15
 - (a) Pot trioxalato ferrate (III)
 - (b) Pot trioxalato chromate(III)
 - (c) Chromus Acetate
 - (d) Hg[Co(SCN)₄]
 - (e) Hexa ammine Ni (II) chloride
3. Qualitative analysis of inorganic mixture containing six radicals including
interfering radicals 15
4. Viva-voce 15
5. Note Book 5

Books Recommend:

1. A text Book of Quantitative Inorganic Analysis- A.I. Vogel
2. Applied Analytical chemistry- O.P. Vermani

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Semester-III
AECC-2
Human values and professional ethics & gender sensitization

28/11/19



Semester-IV
Elective Course-1a
Inorganic Chemistry Special

Full Marks-70

Credits-5

Unit-I (A) Alkyls and aryls transition metals

Types, routes of synthesis, stability and decomposition pathways.

Organocopper in organic synthesis.

(B) Compounds of transition metal-carbon multiple bonds.

Alkylidenes, alkylidyne, low valent carbenes and carbynes synthesis, nature of bond, structural characteristics, Nucleophilic and electrophilic reactions on the ligands, Roles in organic synthesis. Fluxional organometallic compounds, Fluxionality and dynamic equilibrium

Unit-II Transition metal π - complexes.

Transition metal π complexes with unsaturated organic molecules alkenes, alkynes, allyl, diene, dienyl, arene trienyl complexes, their structural features and important nucleophilic and electrophilic reactions.

Unit-III Homogeneous Catalysis.

Stoichiometric reactions for catalysis, homogeneous catalytic hydrogenation, Zeigler Natta polymerization of olefins, catalytic reactions involving CO, [e.g. hydro-carbonylation of olefins, (oxo reaction)], oxopalladation reactions, activation of C-H bond.

Unit-IV (A) Supramolecular Chemistry

Introduction, Non covalent interactions, self-assembly in supramolecular chemistry, Reactivity and catalysis design and synthesis, transport processes and carrier design, supermolecular devices.

(B) Photo chemistry of metal complexes.

Basis of photochemistry, properties of excited states, excited states of metal complexes and their comparison with organic compounds.

Photo- substitution, photo-oxidation and photo-reduction, Excited electron transfer, Reactions of 2, 2-bipyridines and 1, 10 phenanthroline complexes, metal complexes sensitizers, Application of photochemical reactions of co- ordinnance compounds.

Unit-V (A) Molecular rearrangement

D and A process, reactions of geometrical and optical isomers, optical inversions, isomerisation and recemisation of octahedral complexes, intermolecular and intramolecular rearrangement.

(B) **Spectroscopic Application:** Application of Mossbauer and ESR spectroscopy in elucidation of structure of inorganic molecule.

Books Recommend:

1. Organometallic Chemistry- Ayodhya Singh and Ratnesh Singh
2. Organometallic Chemistry- RC.Mehrotr and A. Singh
3. The Organometallic Chemistry of transition metals- Robert H. Crabtree
4. Organometallic Compounds- Indrajeet Kumar.
5. Supramolecular chemistry- concept and perspective- J.M. Lehn
6. Introduction to Supramolecular chemistry- Hiclena- Dodziuk
7. Supramolecular chemistry Norendra N. Ghosh.
8. Photochemistry- Carle E. Wayne and Richard P. Wayne
9. Inorganic chemistry- Gary Walfsberg
10. Inorganic ehemistry- J. E. Hulhey, A. Keiler, L. Keiler, D.K. Medhi
11. Inorganic Chemistry -G.L. Miessler and D.A. Tarr
12. Advanced Inorganic chemistry -Cotton and Wilkinson T.

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Semester-IV
Elective Course-1b
Physical Chemistry Special

Full Marks-70

Credits-5

Unit-I (A) Hartree Fock Theory:

Born oppenheimer approximation. Salter-Condon rule, Hartree-Fock equation, Koopman theory.

(B) Semi Empirical Theories

HMO Theory of π systems. Bond order, Free valence and charge density, and its calculation. Extended Huckle theory.

Unit-II Catalysis and Oscillatory Behaviour

Kinetics of catalytic reaction, Arrhenius intermediates, vant-Half intermediates, Theory of acid-base catalyst, Bronsted catalysis law, Hammet equation, Oscillatory reactions.

Unit-III (A) Kinetics of condensed phase Reaction.

Factors determining reaction rate in solution. Transition state theory in solution, kinetics of ionic reaction. Dependence of rate constant on ionic strength and dielectric constant of the medium. Bronsted Bjerrum equation.

(B) Study of Fast reactions.

Flash Photolysis, relaxation techniques, Molecular beam and shock Tube kinetics, stop flow method.

Unit- IV Kinetics of Electrode reactions.

Faradic and non-faradic current rate law in faradic process, current density, factors affecting electrode-reaction, Effect of double layer structure on electrode reaction rates.

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Unit-V (A) Corrosion

Scope and economic of corrosion, causes and types of corrosion, electrochemical theories of corrosion, Method of protecting the corrosion

(B) Thermodynamics of solids

Specific heat of solids, Einstein heat capacity equation Debye theory of specific heat.

Books Suggested.

- | | | |
|--|---|---------------------------|
| 1. Physical chemistry | : | P.W. Atkins |
| 2. Advance Physical chemistry | : | Gurdeep Raj |
| 3. Chemical Kinetics | : | Keith, J. Laidler. |
| 4. Introduction to chemical Thermodynamics | : | R.P.Rastogi & R.R. Mishra |

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Semester-IV
Elective Course-1c
Organic Chemistry Special

Full Marks-70

Credits-5

Unit-I Terpenoids

Introduction, classification, isoprene rule and special isoprene rule. Structural determination, stereochemistry and synthesis of citral, α -Terpeniol, camphor, santonin

Unit-II Alkaloids

Introduction, classification, general method of structure determination. Structure and synthesis of the following compounds- Papaverine, Nicotine, Atropine and Morphine.

Unit-III Drug Design

- (a) Introduction, classification of drugs. Development of new drugs. Procedures followed in drug design. Structure activity relationship. Receptor. Theories of drug activity with emphasis on Drug-receptors interactions.
- (b) Application of Mass, IR, UV-Visible, NMR (^1H & ^{13}C) in elucidation of structure of organic molecules.

Unit-IV Drugs

- Antineoplastic Agents:** Introduction, Cancer chemotherapy, role of alkylating agents, antimetabolites, natural products and hormones in treatment of cancer. Synthesis of mechlorethamine, cyclophosphamide, uracil-mustards, 6- mercaptopurine, melphalan.
- Cardiovascular Drugs:** Cardiovascular disease, drug inhibition of peripheral sympathetic function, direct acting arteriolar dilators. Synthesis of amyl nitrate, hydralazine verapamil, diazoxide propranol, sorbitrate, quinidine, Methyldopa, atenolol and oxypropenolol.
- Anti-tubercular Drugs:** PAS, Isoniazid, Ethambutol Thiosemicarbozone, Rifampicin.

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Unit-V Heterocyclic Compounds

1. **Benzfused five membered heterocyclic compounds:** Classification, nomenclature of aromatic heteroatoms: Synthesis and reaction of benzopyrole, benzofuran, benzothiophene.
2. **Five and Six membered Heterocycles with two or more heteroatoms:** Synthesis and reaction of oxazole, isoxazole, pyrazole, Imidazole, thiazole, diazine and tetrazines.
3. **Seven and large membered Heterocycles with two or more heteroatoms:** Synthesis and reaction of azepines, oxepines, diazepines, azocines and thiapines.

Books Recommend:

1. Natural Products-Chemistry and Biological Significance by J. Mann, R.S. Davidson, J.B. Hobbs, D.V. Banthrope and J.B. Harborne.
2. Organic Chemistry by J.L. Finar.
3. Rodds Chemistry of Carbon Compounds by S. Coffey.
4. Natural Products Chemistry by Jagdamba Singh and Jaya Singh.
5. The Chemistry of Natural Products by P.S. Kalsi.
6. Chemistry of Natural Products by Nakamshi.
7. An Introduction to Medicinal Chemistry by Graham L. Patrick.
8. Textbook of Organic Medicinal and armaceutical Chemistry by Charles O. Wilson, Ole Gisvold & Robert F. Doerge.
9. Principle of Medicinal Chemistry by Wilam O. Foye, Thomas L. Lemice and David A. Williams.
10. Burgers Medicinal Chemistry and Drug Discovery by M.E. Wolff
11. Hetrocyclic Chemistry by RR. Gupta, M. Kumar and V.Gupta.
12. Heteroeyclic Chemistry by T.L. Gilchrist.
13. Organic Chemistry by I.L. Finar.

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Semester-IV
Elective Course (P) 2a
Practical (Inorganic Chemistry Special)
Duration of Exam 12 hrs.

Full Marks - 50

Credit - 5

1. Qualitative analysis of Inorganic mixture containing six radicals including Mo, V, W, Ce 15
2. Analysis of atleast two metal ions in alloys and minerals 15
(a) Dolomite (b) Brass (c) Solder (d) Bauxite

OR

Spectrophotometric determination of Fe, Ni, Mn , Cr, V, Ti, F, NO_3^- and PO_4^{3-} etc.

3. Viva- Voce 15
4. Record File 5

Books Recommended:

1. Qualitative Analysis - A. I. Vogel
2. Quantitative Analysis - A. I. Vogel

A.R.B. /
29/1/19

Semester - IV
Elective Course (P) 2b
Practical (Physical Chemistry Special)
Duration of Exam 12 hrs.

Full Marks - 50

Credits- 5

(Marks 30)

Two experiments have to be set.

Determination
f

1. Conductometric titration of strong acid and strong base (NaOH+HCl)
2. Potentiometrically pH of a given solution using hydrogen electrode or quinhydrone electrode.
3. Potentiometric Experiments Determination of Acid-base titration.
4. Determination of partition coefficient of Iodine between CCl_4 and water.
5. Determination of partition coefficient of $\text{KI} + \text{I}_2 = \text{KI}_3$ between CCl_4 and water.
6. Viva- voce -15
7. Note Book -5

A.P.O's
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Semester - IV
Elective Course (P) 2C
Practical Organic chemistry (Special)
Duration of Exam 12 hrs.

Full Marks - 50

Credits - 5

Any two experiments have to be set (Marks 30)

1. Separation and identification of organic compounds using chemical methods from organic mixtures containing up to three components
2. Preparation of organic compounds involving several stages
3. Estimation of carbohydrates, protein, aminoacids, ascorbic acid, blood cholesterol and aspirin by UV - visible Spectrophotometric method.
4. Vivo Voce
5. Note Book

15 Marks

05 Marks

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Semester - IV

DSE-1



A.R. Patil
29/2/19

Semester - IV
GE-1

SYLLABUS
FOR

M.Sc. Chemistry

Semester (Ist, IInd, IIIrd and IVth)

ARJ's
29/12/19



Effective from 2020 Onwards

University Department of Chemistry
H. R. Ambedkar Bihar University,
Muzaffarpur - 842001

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CURRICULUM Structure

of the

Two Year (Four Semester)

M.A. Programme in ECONOMICS

SEMESTER I

S. No	Course code	Course / Papers	Credits
1	CC-1	Microeconomic Analysis-1	5
2	CC-2	Macroeconomic Analysis-1	5
3	CC-3	Mathematical Methods	5
4	CC-4	History of Economic Thought	5
5	AECC-1	Environmental Sustainability	5
Total Credits			25

SEMESTER II

S.No.	Course Code	Course / Papers	Credits
1	CC-5	Indian Economy - Issues & Policies - 1	5
2	CC-6	Economics of Growth & Development - 1	5
3	CC-7	Microeconomic Analysis - II	5
4	CC-8	Macroeconomic Analysis - II	5
5	CC-9	Statistical Methods	5
6	AEC - 1	As mentioned in Master Syllabus	5
Total Credits			30

SEMESTER III

S.No.	Course Code	Course / Papers	Credits
1	CC - 10	Indian Economy – Issues & Policies – II	5
2	CC - 11	Economics of Growth & Development – II	5
3	CC - 12	Public Economics	5
4	CC - 13	International Economics	5
5	CC - 14	Research Methodology	5
6	AECC - 2	Human Values and Professional Ethics & Gender Sensitization	5
Total Credits			30

Semester –IV

S.No.	Course Code	Course/ Papers	Credits
1.	EC-1	(A) Agricultural Economics	5
		(B) Industrial Economics-I	
		(C) Basic Econometrics	
		(D) Monetary Economics & Policy	
		(E) Indian Public Finance	
		(F) Urban Economics	
		(G) Financial Economics –I	
		(H) Environmental Economics	

2.	EC-2	(A) Indian Banking & Financial Institutions	5
		(B) Industrial Economics II	
		(C) Demography	
		(D) Agri-Business Management	
		(E) Labour Economics	
		(F) Gender Economics	
		(G) Financial Economics II	
		(H) Time- Series Econometrics	
		(I) Project Work	
02	DSE-1	(A) Fundamental of Economics	5
3.	Or	(B) Indian Rural Development	
		(C) Planning And Economic Development in India	
		(D) Personnel Management & Industrial Relation	
	GE-1	May opt one from Basket of Generic Courses	
Total Credits			15

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M. A. ECONOMICS

SEMESTER - I

CC-1: Micro Economic Analysis-I

Module 1: Consumer Demand Theory | Marshallian Utility Analysis, Indifference Curve Analysis, Price Effect, Income and Substitution Effects (Slutsky and Hicks), Consumer Surplus-Hicksian Approach, Compensated Demand Curve, Revealed Preference Analysis, Hicks' Revision of Demand Theory, The Pragmatic Approach to Demand Theory, The Constant Elasticity of Demand Function, The Dynamic Demand Functions, The Empirical Demand Function, The Linear Expenditure System.

Examined (40) 20 Hours

Module 2: Production Theory | Iso-quant, Production Function, Law of variable proportions, Returns to Scale, Linear Homogeneous Production Function - Cobb-Douglas Production Function, CES Production Function, Cost Functions - Traditional Theory of Cost, Modern Theory of Cost.

Examined (40) 20 Hours

Module 3: Perfect Competition | Features of Perfect Competition, Determination of Market Price and Quantity, Short Run and Long Run Equilibrium of the Firm and Industry, Derivation of Supply curve.

Examined (40) 20 Hours

Module 4: Imperfect Competition I | Monopoly: Short and Long Run Equilibrium, Price Discrimination, Monopoly Power Control and Regulation of Monopoly, Monopsony, Bilateral Monopoly, Chamberlain's Monopolistic Competition - Short and Long Run Equilibrium.

Examined (40) 20 Hours

Module 5: Imperfect Competition II | Duopoly Models: Cournot, Bertrand, Edgeworth and Stackelberg Models, Oligopoly: Characteristics, Sweezy's Kinked Demand model, Models of Cartels and Price Leadership.

Examined (40) 20 Hours

BASIC READING LIST:

1. Krashinsky, A. Modern Microeconomics, Macmillan
2. Alipaz Advanced Economic Theory,
3. Probst, R.S. and D.L. Rubinfeld: Microeconomics, Pearson Educational
4. Crystal, R. and A. Lipsey: Microeconomics, Oxford University Press.
5. Varian, H.R.: Intermediate Microeconomics, W.W. Norton & Co.
6. Krugman, Paul/Wells, Robyn: Microeconomics, Worth Publishers W H FREEMAN & CO
7. Samuel, W.J., Economic Theory and Operations Analysis, Prentice Hall.
8. Chamberlin, E.H., The Theory of Monopolistic Competition.
9. Henderson and Quandt, Micro Economic Theory, A Mathematical Approach.

10. Hicks, J.R., Revision of Demand Theory.
11. Hicks, J.R., Value and Capital. Marshall, A., Principles of Economics
12. Robbins, L., The Nature and Significance of Economic Science
13. Robinson, Joan., The Economics of Imperfect Competition.
14. Samuelson, P.A., Foundations of Economic Analysis.
15. Slichter, G.J., The Theory of Price.
16. Williamson, G.E., The Economics of Discretionary Behaviour (Prentice-Hall, 1964)
17. Cyert, R.M., and J.O. March, A Behavioural Theory of the Firm (Prentice-Hall, 1963)
18. *Ibid.*, K. Varian, Micro Economic Analysis
19. Mascoll, Winston & Green, Micro Economic Theory (M.P)

B.A. ECONOMICS

SEMESTER – I

CG-1: Micro Economic Analysis-I

Module 1: National Income Accounting: Approaches of Macro Economics and Variables - Circular Flow of Income in Two, Three and Four-Sector Economy; Different Forms of National Income Accounting - Social Accounting, Input-Output Accounting, Flow of Funds Accounting and Balance of Payments Accounting.

Module 2: Consumption Function: Consumption Function - Keynes Psychological Law of Consumption - Implication of the Law; Short-Run and Long-Run Consumption Functions; Empirical Evidence on Consumption Function; Income - Consumption Relationship - Absolute Income, Relative Income, Permanent and Life Cycle Income Hypotheses and their Reconciliation.

Module 3: Investment Function: Marginal Efficiency of Capital and Investment - Long Run and Short Run Marginal Efficiency of Investment and Level of Investment, Accelerator Theories namely Simple Investment Multiplier, Dynamic Multiplier, Accelerator and Super Multiplier.

Module 4: Supply of Money: Measures of Money Supply, Theories of Money Supply, Monetary Transmission Mechanism and RBI approach to money supply, High Powered Money and Money Multiplier; Budget Deficits and Money Supply and Control of Money Supply, Analysis and Variations in Money Supply in India.

Module 5: Demand for Money: Theories of Demand for Money - Classical Approach to Demand for Money - Quantity Theory Approach, Fisher's Equation, Cambridge Quantity Theory, Keynes Liquidity Preference Approach, Transaction, Precautionary and Speculative Demand for Money, Aggregate Demand for Money, Derivation of LM curve.

BASIC READING LIST

1. Eisner D.L. (1996) Advanced Macro Economics, McGraw Hill Company Limited, New

York.

2. Scarfe, H.L. (1977), *Cyclic Growth and Inflation*, McGraw Hill, New York.
3. Shapiro, E. (1996), *Macroeconomic Analysis*, Galgotia Publications, New Delhi.
4. Eddy, M and A.T Peacock (1967), *National Income and Social Accounts*, Hutchinson University Library, London.
5. Povelton, J.P. (1960), *National Income and Flow of Funds Analysis*, McGraw Hill, New York.
6. Rao, V.K.R.V (1983), *India's National Income: 1950 to 1980*, sage Publications, New Delhi.
7. Ruggles, E and N Ruggles (1956), *National Income Accounts and Income Analysis*, McGraw Hill, New York.
8. Duesenberry, J.S (1949), *Income, Saving and the Theory of Consumer Behaviour*, Harvard University Press, Harvard.
9. Friedman M. (1957), *The Theory of Consumption Function*, Princeton University Press, Princeton.
10. Mueller, M.G. (1966), *Readings in Macroeconomics*, Holt Rinehart and Winston, New York.

B.A. ECONOMICS

SEMESTER - I

CC-1: Mathematical Methods

Module 1: Concept and Types of Function, Concepts of Derivative, Rules of Differentiation, Applications of Derivatives in Economics, Interpretation of Revenue, Cost, Demand and Supply Functions, Profit Maximisation, Elasticity and their types.

Module 2: Rules of Partial Differentiation, Interpretation and Applications of Partial Derivatives, Homogeneous Function, Euler's Theorem, Cobb-Douglas and CES Production Functions, Rules of Integration- Definite Integration, Application of Integration in Economics, Consumer's Budget and Producer's Budget.

Commented [44]: Total differentiation

Module 3: Determinants and their Basic Properties, Matrix Algebra - Concept and Types, Simple Operation on Matrices, Matrix Inversion, Rank of Matrix, Solution of Simultaneous Equations Model through Matrix Method and Cramer's Rule, Concept of Vector and its Properties.

Module 4: Constrained Optimization, Lagrangian Multiplier and its Simple Economic Applications, Maximization of Utility and Maximization of Profits.

Module 5: Introduction to Linear Programming, Formulation of Linear Programming Problem - Its Structure and Variables, Nature of Feasible, Basic, Optimal Solution, Solution of Linear Programming through Graphic Method, Concept of Duality.

Module 4: Input-Output Analysis - Meaning and Basic Concepts, Open, Closed, Static and Dynamic Models, Gauss Theory- Basic Concepts of Gauss Theory, Zero Sum and Non Zero Sum Games, Pure and Mixed Strategy.

BASIC READING LIST:

1. Mungs, G.S. (1972), *Mathematics and Statistics for Economists*, Vikas Publishing, House, New Delhi.
2. Chiang, A.C. (1988), *Fundamental Methods of Mathematical Economics*, Mac Graw Hill, New York.
3. Allen, R.G.D. (1974), *Mathematical Analysis for Economists*, Mac Millan Press and ELBS, London.
4. Dowling, R.T. (1991), *Mathematical Economics 2nd Edition*, Mac Graw Hill, New York.
5. Yussow, Taro (1971) *Mathematics for Economists*, Prentice Hall of India, New Delhi.

B.A. ECONOMICS

SEMESTER - I

CG. I. History of Economic Thought

Module 1: Mercantilism- Main Policies / Principles related to Precious Metals, Balance of Trade & Role of Export.

Balance of Trade & Role of Export.

Module 2: Physiocracy - Natural Order, Product Net, Circulation of Wealth etc.

Module 3: Classical Economic Thinkers- Adam Smith, David Ricardo, Malthus, Scientific Socialism- Karl Marx, J.S Mill.

Module 4: Neo-Classical Economic Thinkers: Hicks, Myrdal, Arrow & Lewis

Module 5: Kautsky, Dada Hara Nawaji, M.K. Guha, M.O Ranade & K. Gokhale

Module 6: B.R. Ambedkar, Jeevhar Lal Nehru, D.R. Gadgil, Jai Prakash Narayan, Ram Manohar Lohia, Jagjivan Ram, P. R. Brahmanand & C.S. Vaid, V.K.R.V Rao & Arjundev Sen.

BASIC READING LIST:

1. Eric Roll- History of Economics Thought
2. Cole and Eist - A History of Economic Doctrines
3. Gray, A., Development of Economic Doctrines
4. Hensy - History of Economic Thought
5. Lenin, V.I., Imperialism- The Highest Stage of capitalism
6. Marx, K., A Contribution to the Critique of Political Economy
7. Marx, K., Capital Vol. I
8. Marx, K., Capital Vol. II

9. Schumpeter, A History of Economics Analysis Ten Great Economists
10. Roy, I. M., *Aarthi Vicharan Ka Itihaas (Hindi)*
11. Ganguli, B.N. *Indian Economic Thought Nineteenth-Century Perspectives*, Tata Motilal 1980 Publishing Co., New Delhi.
12. Srivastava, S.K., *History of Economics Thought*, S. Chand & Co. Ltd.
13. Shama Shastri, K., *Kautilya's Arthashastra (Translated)*, Mysore Printing & Publishing House, 1995.
14. Rangnekar, L.N., *Kautilya's Arthashastra*, Penguin Classics, 1992.
15. Nisara, Jyotsnabai, *Glimpses of World History*, Oxford University Press, 1984.
16. Nisara, Jyotsnabai, *An Autobiography*, Allied Publishers Pvt. Ltd., 1962.
17. Lohia, Ram Manohar, *The Caste System*
18. Lohia, Ram Manohar, *Mars, Gandhi and Socialism*
19. Lohia, Ram Manohar, *Economics After Mars (Hindi)*
20. Singh, Ram Bhand, *India's Economic Development and Lohia's Thought*
21. Kapur, Manoran, *Ram Manohar Lohia*, Publications Division, New Delhi
22. Ranjan, Sudhanshu, *Jyotirakash Narayan*, National Book Trust.
23. Anandkar, B.R., *The Evolution of Provisional Finance in British India, 1916*
24. Anandkar, B.R., *Small Holdings in India*
25. Sahay Sanjay, *Leadership and Political Ideas of Dalu Jangiramma*, Bharati Prasth Sadan, Patna

M.A. ECONOMICS

SEMESTER – II

CE. 5: Indian Economy- Issues and Policies-I

Module 1: Introduction- Indian Economy during British Rule: Commercialization of Agriculture, Process of Industrialization, Composition of Foreign Trade, GNP and Occupation, Trends in National Income Growth & Structure, Physical Quality Life Index (PQLI), Human Development Index (HDI); Nature and Magnitude of Workforce and Inequality, Unemployment and Poverty, Measurement of Inequality and Poverty-Lorenz Curve and Gini Co-efficient, Head – Count Ratio, Poverty Gap Ratio, Sen's Index.

Module 2: Agriculture-Performance since Independence - Across Crops and Zones, Institutional Structure – Land Reforms- Farm Size and Productivity, Agriculture Inputs, Technological Change in Agriculture – Sustainability of Agriculture Growth, Agriculture Finance, Credit, Role of Co-operatives, Agriculture Marketing, Pricing, Agrarian Crisis, Food Security, New Agricultural Strategy, 2nd Green Revolution.

Module 2: Industry-Growth and Pattern of Industrial Development-Industrial Stagnation, Trends in Industrial Productivity, Industrial Financing, Industrial Policies - Privatisation and Disinvestment, Cottage and Small Scale Industries, Globalisation and Technology Transfer, Need and Impact of 4th Industrial Revolution.

Module 4: Services-Sources of Service Sector Growth- Infrastructure, Physical and Social, Status and Policies -Transport, Energy, Telecommunication, Technology- Information Technology - Research and Developments - Health and Education, Knowledge Revolution & Human Capital Formation.

Module 5 Economic Reforms- Changing Role of State, Globalisation of Indian Economy, WTO and its Impact, National agenda for Governance, Issues in Export - Import Policy and Foreign Exchange Management Act (FEMA), Exchange Rate Policy, Foreign Capital and MNCs in India, Trade Reforms in India, Energy Crisis, Share Financing, Second Generation Reforms, NITI Aayog, Recent Policy Initiatives- DBT, JAM, Cashless Economy & Demonetisation.

BASIC READING LIST

1. Ahluwalia, I. J. and J.M.D. Little (Eds.) (1991), *India's Economic Reforms and Development* (Essays in honor of Jan Mohan Singh), Oxford University Press, New Delhi.
2. Bardhan, P.K. (9th Edition) (1999), *The Political Economy of Development in India*, Oxford University Press, New Delhi.
3. Bora, K.S. and P.S.Raichy (Ed.) (1997), *Structural Changes in Indian Economy*, Guru Nanak Dev University Press, Amritsar.
4. Brahmananda, P.R. and V.R. Prashannaiah (Eds.) (2001), *Development Experiences in the Indian Economy: Inter-State Perspectives*, Bookwell, Delhi.
5. Chakravarty, S. (1987), *Development Planning: The Indian Experience*, Oxford University Press, New Delhi.
6. Chitravala, M.L. (1996), *Dilemmas of Growth: The Indian Experience*, Sage Publications, New Delhi.
7. Kapila, Uma (Ed.), *Indian Economy Since Independence*, Academic Foundation, New Delhi.
8. Rangraj, C., *Select Essays on Indian Economy*, vol. I & vol. II, Academic Foundation, New Delhi.
9. Dutt, Raddha and Sundaram, K.P.M., *Indian Economy*, Latest Edition, S.Chand, 2012. 10. C.M.I.E. Reports on the Indian Economy.
10. Publications of Central Statistical Organization.
11. Publications of National Sample Survey Organization.
12. Five-Year Plans 11th to 12th Planning Commission, Govt. of India, New Delhi.

14. Jha, Bimal (Ed), Indian Economy: Problems and Prospects, Penguin.
15. Bhalu, G.S., Indian Agriculture
16. Vigyan (Monthly Journal)
17. Kausikdatta (Monthly Journal)
18. Indian Journal of Agricultural Economics
19. Incentives, Mohan Prasad (2014), Vikas Ka Arambhacharya evam Arjyan, ANE Publications, New Delhi.
20. Economic Survey: Different Issues
21. Bhasi EK, Panchayati Gnan Akhshay & Institute Akhshay
22. ICSI Publications

M A ECONOMICS
SEMESTER - II

CC-4: Economics of Growth and development-I

Module I: Conceptual Frameworks - Concept of Economic Growth, Economic Development, Economic Progress and Economic Welfare, Current trends - New International Economic Order - International Interdependence and Globalization-Dimensions of Development Gap- Human Development Index- Human Poverty Index- Multi-dimensional Poverty Index- Gender related Development Index-Fulfillment and Capability Approach, Concept of Inclusive & Sustainable Growth.

Module II: Structural Transformation of Growth- Rodrik's stages of growth, Balanced vs Unbalanced Growth, Role of Technology and Capital in Economic Growth, Malthusian Theory of Population, Regional Growth Differences-Poverty & Inequality, Kuznet's Inverted U Hypothesis.

Module III-Theories of Economic Growth - Kaldor's growth theory, Classical models of Growth- Adam Smith and Ricardo, Marx and Schumpeter on Development and Future of Capitalism, W.A. Lewis & Ranis-Fei Models of Economic Growth, Mahalanobis Model, Harrod-Domar Model, Big - Push Theory.

Module IV-Role of Social Aspect in Growth-Human Capital and Development- The Costs and Benefits of population growth-Simon's Challenge, Demographic Dividend- The Concept of Optimum Population- Education and Investment in Human Capital, Gender Gap in Development and the Problem of Missing women in the Indian Context-Strategies for Improving Education and Employment- Social Engineering and Inclusive growth.

BASIC READING LIST

1. Ray Debnaj: Development Economics, Oxford, University Press 1999
2. Mirer M. Gerald and Basuch: Leading issues in Economic Development, Oxford University Press (2000)
3. Theilwall, A., Growth and Development with special Reference to Developing Economies, Palgrave Macmillan (2007)

4. Todaro M.P. & Smith S.C. *Economic development (2nd Edition 2005)*, Person Education, Indian Branch, Delhi.
5. Todaro M.P. *Economic development in the third World, (4th Edition 1995)*, Longman, Singapore.
6. Dev Maheshwari S. *Inclusive growth in India-collected essays*, Oxford University press, New Delhi (2010)
7. Chandlar Ray, Jayant. *An introduction to Development and Regional planning with special reference to India*, Orient Longman Kolkata (2001)
8. Vijaya Hayani and Yoshitaka Goto. *Development Economics (2nd Edn)*Oxford University Press(New Delhi)
9. Vandana Datta and Robert B Potter : *The Compass to development studies-II*, Eds. Abhinav vivek sris, Viva books Pvt. Ltd. New Delhi.
10. UNDP. *Human Development Report, 2010*
11. Srivastava, M.P. *Economics of Development and Planning*, ANS Publications in Press.

M. A. ECONOMICS
SEMESTER – II

CC-7: Micro Economic Analysis-II

Module 1: Alternative Theories of the Firm: Cournot's Model, Williamson, and Marston Models, Full Cost Pricing Models, Bain's Limit Pricing, Behavioural Model of Cyert and March.

Commented [9]: 12 views

Module 2: Distribution: Evolution and Modern Theories of Rent, Marginal Productivity Theory of Wages, Neo-Classical Theory of Interest, and Theories of Profit, Fisher's Product Exhaustion Theorem, Technical Progress and Factor Shares.

Commented [10]: 12 views

Module 3: Equilibrium Analysis: General Equilibrium-Walrasian Model, Features of Market Equilibrium: Existence, Stability (Marshall and Walrasian Conditions), Uniqueness, Co-rob models.

Module 4: Welfare Economics: Pigorian Welfare Economics, Pareto Optimum Conditions, Social Welfare [Function](#), [Compensation Principle](#), [Arrow's Impossibility Theorem](#).

Commented [11]: 12 views and wealth maximization

Module 5: Economics of Risk and Uncertainty: Role of Expectations, Consumer's Choice involving Risk (Risk Takers, Risk Averse and Risk [Seeker](#)), [Insurance](#) – [Mergers and Acquisitions](#), [Index](#), [Savage Hypothesis](#), [Gambling and Insurance](#).

Commented [12]: 12 views
Game Theory – Non-Cooperative game.
Accounting information: Adverse selection and moral hazard.

BASIC READING LIST:

1. Embreyannis, A. *Modern Microeconomics*, Macmillan
2. [Abhijit](#) *Advanced Economic Theory*,

1. Feiwel, R.S. and D.L. Rubinfeld: *Microeconomics*, Pearson Educational
2. Crystal, R. and A. Lipsey: *Microeconomics*, Oxford University Press
3. Varian, H.R.: *Intermediate Microeconomics*, W.W. Norton & Co
4. Krugman, Paul, Robin, *Microeconomics*, Worth Publishers W H FREEMAN & CO

M.A. ECONOMICS
SEMESTER - II

CE-8: Micro Economic Analysis-II

Module 1: Post-Keynesian Theories of Demand for Money: Post-Keynesian Approaches to Demand for Money – Patinkin's Monetary Model- Real Balance Effect, Approaches of Baumol and Tobin, Friedman and the Modern Quantity Theory, Crisis in Keynesian Economics and the Revival of Monetarism.

Module 2: Neo-classical and Keynesian Synthesis: Neo-classical and Keynesian Views on Interest, The IS-LM model- Extension of IS-LM Model with Government Sector, Relative effectiveness of Monetary and Fiscal policies, IS-LM model in Open Economy.

Module 3: Theory of Inflation: Classical, Keynesian and Monetarist Approaches to Inflation, Structural Theory of Inflation, Philips Curve Analysis – Short Run and Long Run Philips Curve; The Natural Rate of Unemployment Hypothesis; Tobin's modified Philips Curve and Policies to Control Inflation.

Module 4: Business Cycles: Business Cycles – Theories of Schumpeter, Samuelson and Hicks & Kaldor, Interaction of Multiplier and Acceleration Model, Control of Business Cycles –Relative Efficacy of Monetary and Fiscal Policies.

Module 5: New Classical Macroeconomics: The New Classical Macroeconomic Approach-Policy Implications of New Classical Approach – Rational Expectations Theory, Role of Expectations in Macroeconomic Analysis -Adaptive Expectations, Supply Side Economics - Assumptions and Evaluation, Macro Stabilization Policies and Introduction to New Keynesian Economics.

BASIC READING LIST

1. Gordon, R. and S.G.Harris (1998), *Macroeconomics*, Addison Wesley.
2. Calvo, F.M. (1998), *Macroeconomic Theory and Stabilization Policy*, McGraw Hill, Kogakusha, Tokyo.
3. Chakravarty, S.C. (1985), *Report of the Committee to Review the Working of the Monetary System*, Reserve Bank of India, Bombay.
4. Gupta, S.D. (1995), *Monetary Planning India*, Oxford University Press, New Delhi.

5. Gurley, J and E.S. Shaw (1960), *Money in a Theory of Income* Brookings Institution, Washington
6. McKinnon, G.E. (1978), *Money, the Price Level and Interest Rates*, Prentice-Hall of India, New Delhi.
7. Reddy, Y.V.(2000), *A Review of Monetary and Financial Sector Reforms in India-A Central Banker's Perspective*, UFFPIS, New Delhi.
8. Friedman, M. (1956), *Studies in the Quantity Theory of Money*, the University of Chicago Press, Chicago.
9. Keynes, J.M. (1936), *The General Theory of Employment, Interest and Money*, Macmillan, London.
10. Allen, R.G.D., *Micro-Economic Theory*
11. Hansen, A.H., *A Guide to Keynes*
12. Hansen, A.H., *Monetary Theory and Fiscal Policy*
13. Johnson, H., *Essays in Monetary Economics*
14. Johnson, H., *Further Essays in Monetary Economics*
15. Keynes, J.M., *The General Theory of Employment, Interest and Money*
16. Khan L., *Keynesian Revolution*
17. Karlsson, K., *Introduction to Keynesian Dynamics*
18. Karlsson, K., *Monetary Theory and Public Policy*
19. Patinkin, Don., *Money, Interest and Prices*
20. CMEI Report: various issues
21. Dornbusch, Fisher & Staite- *Macroeconomics (TME)*
22. Shapiro E., *Microeconomic Analysis* (Gulgotia Publications)

M A ECONOMICS

SEMESTER - II

CC - B: Statistical Methods

Module 1: Review Methods of Collecting Data - Census and Sampling - Their Advantages and Disadvantages, Types of Sampling, Measures of Central Tendency - Mean, Median and Mode, Measures of Dispersion - Range, Quartile Deviation, Mean Deviation, Standard Deviation, Variance, Coefficient of Variation, Skewness & Kurtosis.

Module 2: Review Concept of Correlation- Karl Pearson's Coefficient of Correlation, Spearman's Rank Coefficient of Correlation, Partial and Multiple Correlation, Simple Regression- Estimation of Regressions- Coefficients by the Method of Least Squares.

Module 3: Review Methods of Constructing Index Numbers and Their Uses, Weighted Index- Laspeyres's, Paasche's and Fisher's Indices, Cost of Living Index Numbers.

Module 4: Concept of Probability- Classical and Empirical Definitions of Probability, Laws of Addition and Multiplication, Conditional Probability and Baye's Theorem, Mathematical Expectation, Binomial, Poisson and Normal Distributions- Its Concept, Mean and Variance, Properties of Normal Distribution.

Module 5: Concept of an Estimator and Its Sampling Distribution, Desirable Properties of a Good Estimator, Formulation of Statistical Hypothesis - Null and Alternative, Types of Errors, Testing of Hypothesis- Testing for Mean of a Population from Large Sample and Testing for Difference between Means of Two Population from Large Sample, Use of Z, t, Chi - Square and F - distributions.

Module 6: Time Series Analysis, Components of Time-Series Data, Determination of Secular Trend by Moving Average and Ordinary Least Square Methods.

Note: Use of Electronic Calculator will be permitted.

BASIC READING LIST

1. Gupta, S.P. (2007), Statistical methods, Sultan Chaud and Sons, New Delhi.
2. Nagar, A.L. and Das, R.K. (1983) Basic Statistics 2nd Edition, OUP, Delhi.
3. Spiegel, M.R. (1992), Theory and Problems of Statistics, McGraw Hill Book Co., London.
4. Banerjee, Debani, Element Business Statistics.
5. Singh, S.P., Statistics: Theory and Practice (Hindi).
6. Talasila, D.N. and Verma Talasila: Fundamentals of Statistics.
7. Mehta, G.S., Mathematics and Statistics for Economists.
8. Agarwal, D.R., Quantitative Methods.
9. Spiegel, M.R., Theory and Practice of Statistics, Schaum Series.
10. Croxon, E.F. and Cowden, D.J. Applied General Statistics, Prentice Hall.

M. A. ECONOMICS
SEMESTER - III

CC- 10 Indian Economy - Issues & Policies-II

Module -I: Population and Employment Population- Growth Pattern, Implications- Rural Urban Migration - Population Policies, Trends in Employment - Unemployment, Nature and Policies, Changing Nature of Labour Market Relations during recent years.

Module - 2: Social Aspects: Recent Trends in the State of Social Aspects, their Implications and Policies - Poverty- Inequality-Regional Imbalances, Child Labour, Gender, Caste Government, Corruption- Environment-Natural Resources, Rights to Forests

Module - 3: Fiscal, Financial and External Sector Issues: Fiscal Deficit, Tarriff and Subsidies- Fiscal Policies- Critical Appraisal - Central- State Fiscal Relationships, Latest Finance Commission, Major Recommendations -Recent Budgets, Parallel Economy—Democratization and GST, Monetary & Fiscal Measures in India, Financial System, Banking and Insurance - Capital markets -Critical Appraisal of Monetary and Financial Sector Reforms - Financial Inclusion Structure and Direction of India's Foreign Trade- Balance of Payments, Post 90 Trends- Exchange Rate Trends & Policy.

Module - 4: Bihar Economy: Growth and Structure-Agriculture-Performance, Major Challenges in Agriculture, Industrial Growth, Globalisation (WTO, ASEAN) and Bihar's Agriculture, Industrial backwardness- Policies, Service Sector, Sources of Growth- Constitution, Tourism, Trade, Transport, Energy, Information Technology, Migration -Dimension & Impact, Human Resources Development-Emerging Issues, Policies for Unemployment, Environment Degradation, Fiscal crisis.

BASIC READING LIST

1. Mahendra K. Prasad (2009), India's Changing Population Profile, National Book Trust, New Delhi.
2. Radhakrishnan R., Shovan Roy (Eds) (2005) Handbook of Poverty in India, Oxford University Press , New Delhi
3. Jayraj D, Subramanian S (2010) Poverty, Inequality and Population, Oxford University Press , New Delhi
4. Rasthika Khare (2011) The Battle for Employment Guarantee, Oxford University Press , New Delhi
5. Amartya Sen (2001) Development as Freedom, Oxford University Press , New Delhi
6. Amartya Sen, Jean Drèze (2005) India - Development and participation Oxford University Press , New Delhi
7. Arvind Dasgupta (2011) The Grammar of Caste, Oxford University Press , New Delhi
8. Sriramachandran KC, Anandhi Kande Handbook of Urbanisation-Oxford University Press , New Delhi
9. Y Y Reddy (2011) Global Crisis, Recession and Upturn Recovery, Oxford Blackman, New Delhi
10. Mahendra S (2010) Inclusive Growth in India-Oxford University Press , New Delhi
11. Harvard T A, Ramaswamy N R.(2011), Financial Access in Post Reform India, Oxford University Press , New Delhi
12. Mohan Babu (Ed) (2011), Growth with Financial Stability, Oxford University Press , New Delhi

13. Mihir Bakshi (2011) *Money and Finance in the Indian Economy*, Oxford University Press, New Delhi
14. George K.K (1999), *Limits to Growth Model of Development*, CED, Irivandram.
15. Sanil Mehta, Anji Kocher, Anu M Kumar, *Crouching Tiger, Snarling Cow*, DPC Books, Kottayam.

M. A. ECONOMICS
SEMESTER – III

EC-11: Economics of Growth & Development-II

Module II: Internal and International Migration- Urbanization- Todaro model, Choice of Technology- Intermediate Technology- Embodied and Disembodied Technological Change-Capital Output Ratio -Domestic and Foreign Sources of Capital-Hecks, Harrod - Domar and Solow-Swan Models of Growth- New Endogenous Growth Theory and Macroeconomic Determinants of Growth.

Module III: Prebisch-Singer Thesis-Models of Export Led Growth- Neo-Classical Supply-Side Model- BOF Constrained Growth Model and Vicious Circle Model- Trade Liberalization and Poverty Reduction in Developing Countries.

Module IIII: Cost-Benefit Analysis- Shadow Prices and Project Evaluation-Investment Criteria-Total Factor Productivity and Growth. Use of Input-Output Analysis and Linear Programming in Development Planning.

Module IV: Models of Money, Phelps, Przewski, Mrs. Joan Robinson, Ranney model of Economic Growth, Basic Idea of Endogenous Growth model-AK Model, Romer and Lucas Model.

BASIC READING LIST

1. Ray Debing, *Development Economics*, Oxford, University Press 1999
2. Miler M. Gerald and Rancho, *Leading Issues in Economic Development*, Oxford University Press (2000)
3. Theobald, A., *Growth and Development with special Reference to developing economies*, Palgrave Macmillan (2009)
4. Todaro M.P, D. Smith S.C, *Economic development (8th Edition 2007)*, Pearson Education, Indian branch, Delhi
5. Todaro M.P., *Economic development in the third World, (4th Edition 1991)*, Longman, Singapore.
6. Dev. Mahendra, B., *Inclusive growth in India-collected essays*, Oxford University press, New Delhi (2010)
7. Chandan Ray, *Jayanti: An introduction to Development and Regional planning with special reference to India*, Orient Longman Kolkata (2001)

R. Vijay Narayan and Yoshitaka Goto: *Development Economics* (2nd Edn) Oxford University Press (New Delhi)

9. W. W. Rostow and Robert S. Putnam: *The Commission on development studies II* eds. Abhimata vishwavidyalaya, Viva books Pvt Ltd, New Delhi.

10. UNDP: *Human Development Report, 2010*

11. Duggale, A.K., *The Political Economy of underdevelopment*, CUP

12. Baran, paul A., *The Political Economy of Growth*, Penguin Books

13. Chakravarti, S., *Alternative Approaches to the Theory of Economic growth*

14. Chers, S. C and Demark, R.A (Eds.), *The Underdevelopment of Development*,

Sage Publications, New Delhi, 1996

15. Higgins, Benjamin, *Economic Development*, Central Book Depot, Allahabad

16. Meier and Baldwin, *Economic Development*

17. Meier, G.M., *Leading issues in Economic Development 1999*, OUP

18. Sen, A. K (Ed.), *growth Economics*, Indira Prasad, Prangon

19. Ray D., *Development Economics* (OUP)

III A ECONOMICS

SEMESTER - III

CE-12: Public Economics

Module 1: Introduction: Role of State in Economic Activities - Allocation, Distribution and Stabilisation Functions, Changing Role of State in a Mixed Economy. Classical, Keynesian and Modern Approach to Public Finance-Functional Finance, Market Failure,

Module 2: Public Choice: Public choice - Private and Public Mechanisms of Allocating Resources, Theory of Social Goods-Samuelson-Private and Merit Goods.

Module 3: Public Policy: Stabilisation policy - Keynesian Case for Stabilisation policy, Public Debt, Principles of Public Debt, Burden of Public Debt, Management and Repayment of Debt, Budget-Balanced and Unbalanced Budget, Zero-Base Budgeting, Performance Budgeting, Objectives & Importance of Fiscal Policy, Deficit Finance-Concept & Importance.

Module 4: Public Expenditure: Theories of Public Expenditure, Wagner's Law of Increasing State Activities- Peacock, Wicksman Hypothesis, Principle of Maximum Social advantage - Growth and Pattern of Public Expenditure in India, Effects of Public Expenditure

Module 5: Taxation: Approaches to Taxation - Benefit Approach, Ability to Pay Approach and Neutrality approach - Elasticity and Burden of Taxation - Incidence, Shifting, Effects and Burden of Taxation-Types and Classification of Taxes and VAT, GST, Direct Tax Code, Digitalisation and Taxation

Module 6: Fiscal Federalism: Financial Administration and Financial Control in India, Fiscal Federalism- Sarkaria Commission Report and Current Finance Commission, Digitalisation and Public Financial Management System.

BASIC READING LIST

1. Atkinson, A. B and J.E. Stiglitz (1980), *Lectures on Public Economics*, Tata McGraw Hill,

New York.

2. Auerbach, A J and M. Feldman (Eds.) (1985), *Handbook of Public Economics*, Vol. 1, North Holland, Amsterdam.
3. Buchanan, J.M (1970), *The Public Finance*, Richard D-Irwin, Homewood.
4. Goode, R (1986), *Government Finance in Developing Countries*, Tata McGraw Hill, New Delhi.
5. Houghton, J.M (1970) *The Public Finance: Selected Readings*, Pergam, Harmondsworth.
6. Jha, R (1998), *Modern Public Economics*, Routledge, London.
7. Menutt, P (1996), *The Economics of Public Choice*, Edward Elgar, U.K.
8. Musgrave, R.A (1970), *The Theory of Public Finance*, McGraw Hill, Englewood, Tokyo.
9. Musgrave, R.A and P.B. Musgrave (1976), *Public Finance in Theory and Practice*, McGraw Hill, Englewood, Tokyo.
10. Shoup, C.S (1976), *Public Finance*, Aldine, Chicago.
11. Sharma, P (Ed.) (1985), *Tax Policy: Handbook*, Tax Division, Fiscal Affairs Department, International Monetary Fund, Washington DC.
12. Dalton, H., *Public Finance*
13. Jha, R., *Modern Public Economics*, Routledge, London, 1998
14. Hella, U., *Public Finance*
15. Piggot, A.C., *Public Finance*
16. Taylor, P.E., *The Economics of Public Finance*
17. *Report of the Chalfish Committee*
18. *Report of the Koffler Committee*
19. *Finance Commission Reports*
20. *CMBE Reports*
21. Gupta, Sanjeev; King, Michael; Shah, Alpesh, *Warrior Generations (2007) Digital Revolution in Public Finance* IMF Publications, Washington DC, USA.

M. A. ECONOMICS
SEMESTER - III

CC - 10: International Economics

Module 1: Theory of International Trade: Comparative Cost Theory of International Trade, Modification and Refinements of Heckscher - Ohlin Theory of Trade, Theorem of Factor Price Equalization, Factor Reversal Theorem-Linder's Theory, Posner's Technological Gap Theory, Keixis Theory of Availability, The Rybczynski Theorem - Concept and Policy Implications of Importing Growth.

Module 2: Measurement of Gains: Measurement of Gains from Trade and their Distribution, Concepts of Terms of Trade, The Theory of Interventions.- Concept and Economic Effects of Tariffs and Quotas on National Income, Output, Employment, Terms of Trade and Non - Tariff Barriers, Reciprocity - Theory or Political - Ricard Hypothesis.

Module 3: Balance of Payments: Equilibrium and Disequilibrium in the Balance of Payments- Elasticity Approach, Absorption Approach and Monetary Approach to the Theory of Balance of Payments Adjustment, Foreign Trade Multiplier, Trade Deficits, EXIM Policy

Module 4: Exchange Rate Determination: Exchange Rates, Types and Determination of Exchange Rates in Short and Long run, Hybrid Exchange Rate Policy, Managed Flexibility of Exchange Rate Policy and Exchange Rate Policy in Practice

Module 5: Regional Blocks & International Institutions: Static & Dynamic Effects of Custom Union Functions of WTO (TRIPS, TRIMS), UNCTAD, IMF, World Bank and SAARC. Trade Reforms in India: Recent Changes in the Direction and Composition of Trade and their Implications; Changing Global Scenario and Trade Barriers.

BASIC READING LIST

1. Shapiro, J. (Ed.) (1981), *International Trade, Selected Readings*, Cambridge, University Press, Massachusetts.
2. Carbaugh, R.J. (1999), *International Economics*, International Thompson Publishing New York.
3. Chacholades, M. (1998), *International Trade: Theory and Policy*, McGraw Hill, Kogakusha, Japan.
4. Dorn, M.S. (2000), *International Economics, Study, Guide and Work Book*, (2nd Edition), Routledge Publishers, London.
5. Dorn, R.M. and J.H. Math (2000), *International Economics*, Routledge, London.
6. Krash Bergan, C.P. (1975), *International Economics*, R.D. Irwin, Homewood.
7. King, P.G. (1997), *International Economics and International Economic Policy: A Text*, McGraw Hill International, and Singapore.
8. Krugman, P.R. and M. Obstfeld (1994), *International Economics, Theory and Policy*, Glenview, Fortman.
9. Solerstein, B. *International Economics*.

B.A. ECONOMICS

SEMESTER - III

CC-14 Research Methodology

Module-1: Introduction: Aims, Objectives, and Scope of Research in Economics, Types of Research-Scientific Research, Methodology of Economic Research- Exploratory, Descriptive,

Analytical Quantitative and Qualitative Approaches, Historical, Experimental & Ex-Post Facto Research - Importance of Review of Literature in Research, Steps Involved in Scientific Research

Module-2: Sampling and Data Collection: Collection of Primary and Secondary Data, Need of Sampling, Stratified Sampling, Multi-Stage Sampling, Systematic Sampling, Cluster Sampling, Size of Sampling, Uses of Sampling, Sampling and Non-sampling Errors- Observation Methods, Participant and Non-Participant Methods- Case Study, Quantitative and Interview Schedule, Projective Indirect Methods, Focus-Group Study (FGD), Rapid Appraisal Survey (RAS).

Module-3: Research Problems: Steps Involved, Aims and Objectives, Identification of Research Problems, Theoretical Framework and Statement of the Problem, Review of Research, Formulation of Objectives and Hypothesis, Types of Hypothesis, Types of Errors, Defining the Concepts in Research Design, Hypothesis Testing, Report Writing- Steps and Process, APA Style of Writing References.

Module-4: Computer & Its Application: MS-Word MS-Excel, Basic Use of SPSS.

BASIC READING LIST

1. C. R. Kothari, Research Methodology, Wisdom Prakash
2. A.N. Sastha and Anantji Singh, Research Methodology in Social Research, Himalaya Publishing House.
3. Wilkinson and Shandheran, Methodology and Techniques of Social Sciences, Himalaya Publishing House.
4. O. R. Krishna Swamy and Rangaswathan, Methodology of Research in Social Sciences, Himalaya Publishing House.
5. Ram Ahuja, Research Methods, Rawat Publications.
6. C.S.O. Guide to Official Statistics.
7. Ghosh, B.N., Scientific Methods and Social Research.
8. Tandon, B.C., Research Methodology in Social Science.
9. Subramanian, N., Introduction to computers.
10. Young, P.V., Scientific Social Surveys and Research (Prattice-Hall)

M. A. ECONOMICS **SEMESTER - IV**

EC-1 (Group-A): Agricultural Economics

Module 1: Agriculture and Economic Development: Nature and Scope of Agricultural and Rural Economics, Causes of Backwardness of Agriculture and Efforts and Approaches towards the Remedies, Traditional Agriculture and its Modernization, Role of Agriculture in Economic

Development, Interdependence between Agriculture and Industry, Agricultural Development, Agriculture and Allied Activities, Cropping Pattern and Factors Affecting it.

Module 2: Agricultural Production and Productivity: Agricultural Production - Resource Use and Efficiency, Production Function Analysis in Agriculture, Factor Contribution and Resource Substitution, Farm Size and Productivity Relationship, Technological change, labour Absorption in Agriculture, Recent Trends in Agricultural Growth in India, Inter-Regional Variations in Growth of Output and Productivity, Sustainable agriculture and Food Security, Rainbow Revolution, Secondary Agriculture.

Module 3: Agriculture Finance: Rural Saving and Capital Formation, Role of Credit and Rural Credit, Organized and Unorganized Capital Market (Institutional and Non-institutional), Characteristics and Sources of Rural Credit, Reorganization of Rural Credit-Co-operative Societies, Commercial Banks, Regional Rural Banks, Micro Finance, Role of NABARD.

Module 4: Agricultural Marketing and Prices: Agricultural Prices and Marketing, Balancing Agricultural Prices, Cobweb Model and Income Stability, Agricultural Markets, Regulated Markets, Marketed and Marketable surplus, Marketing Channels, Price Spread Behavior of Agricultural Prices - Terms of Trade between Agricultural and Non-Agricultural Prices, Need for State Intervention, Objectives of Agricultural Price Policy, Strategy of Agricultural Development.

BASIC READINGS LIST

1. Bhadani, A. (1984) *The Economic Structure of Backward Agriculture*, Macmillan, Delhi.
2. Bilgrami, S.A.R. (1996), *Agricultural Economics*, Himalaya Publishing House, Delhi.
3. Dasgupta M.L. et al, (1992) *Indian Agricultural Development since Independence*, Oxford & BH New Delhi.
4. Ghosh, A. and S. Kaly (1999), *Trade Liberalisation and Indian Agriculture*, Oxford University Press, New Delhi.
5. Joshi, P.C. (1977), *Land Reforms in India: Trends and Prospects*, Allied Publishers, Bombay.
6. Killion, A.S. and Tyagi D.S. (1983), *Agriculture Price Policy in India*, Allied Publishers, New Delhi.
7. Rao C.H. Ramaswami (1975) *Agricultural Growth, Rural Poverty and Environmental Degradation in India*, Oxford University Press, New Delhi.
8. Rauts, A (1982), *Indian Agricultural Economics, Myths and Reality*, Allied Publishers, New Delhi.
9. Saini, G.R. (1979), *Farm Size, Resource Use Efficiency and Income Distribution*, Allied Publishers New Delhi.
10. Upendri, M. (1990), *Marketable and Marketed Surplus in Agriculture*, Mittal Publications, New Delhi.

B' & ECONOMICS

SEMESTER - II'

EC- I (Group-B): Industrial Economics-I

Module-1: Introduction: History and Scope of Industrial Economics, Industrial Efficiency-Concept & Measurement, Meaning and Classification of Industries, Use-based, Revenue Based and ASO-Two and Three Digit Classification, The Role of Industry in Economic Development, Classical Theory of Industry.

Module-2: Theories of Growth of Firms: Theories: Darwin, Peacock and Marxist and Industrial Location Theories: Weber, Sargent Florence, and Losch- Factors Affecting Industrial Location.

Module-3 Market Structure and Market Performance: Concepts & Organization of a Firm, Market Structure, Sellers Concentration, Product Differentiation, Entry Conditions, Economics of Scale.

Module-4 Market Performance: Profitability Allocation, Constraints on Growth Productivity, Efficiency and Capacity Utilization-Concept and Measurement- Cost-Benefit Analysis- NPV (Net Present Value) and IRR(Internal Rate of Return)-Criteria.

BASIC READING LIST

1. Ahluwalia, I.J. (1983) *Industrial Growth in India*, Oxford University Press, New Delhi.
2. Hartford, R.R. (1983), *Industrial Economics*, Wiley Eastern Ltd., New Delhi.
3. Chervilans, F. (1994), *Industrial Economics: Indian Perspective* (3rd Edition), Himalaya Publishing House, Mumbai.
4. Datta, B. (1999), *Industrial Economy in India* (2nd Edition,) Himalaya Publishing House, Mumbai.
5. Devian, P.J and E.M. Jones D. Jr (1976), *An Introduction to Industrial Economics*, George Allen and Unwin Ltd., London.
6. Government of India, *Economic Survey* (Annual)
7. Hay, D. and D.J.Morris (1976), *Industrial Economics: Theory and evidence*, Oxford University Press, New Delhi.
8. Kanchal, S.C. (1986), *Industrial Economy of India* (2nd Edition), Chaitanya Publishing House, Allahabad.
9. Reserve Bank of India, *Report on currency and Finance* (Annual).
10. Sing, A and A.N.Sinha (1988), *Industrial Economics*, Himalaya Publishing House, Mumbai.

M. A. ECONOMICS

SEMESTER - II

EC-1 (Group-C) Basic Econometrics

Module - 1: Test of Significance: Large & Small Sample Tests.

Module - 2: Theoretical Frequency Distributions: Binomial, Poisson and Normal Distributions, their Means and variances, use of Normal curve table.

Module 3: (a) Linear Regression Model: Assumptions of Least Square Estimator, Properties of Ordinary Least Square (OLS). (b) Logistic Regression. (c) The Multiple Regression- (Matrix approach).

Module 4: Problems of Single Equation Model: (a) Autocorrelation - meaning, Detection (Durbin - Watson Test, The Von-Neumann Ratio Test), Causes and consequences of Autocorrelation, Solution of Autocorrelation. (b) Multicollinearity: Meaning, Detection and Consequences of Multicollinearity, Efficient Estimation under Multicollinearity (c) Heteroscedasticity: Meaning, Causes and Consequences of Heteroscedasticity, Tests for Heteroscedasticity - The Spearman Rank - Correlation Test, Goldfeld-Quandt Test, The Park Test, Glejser Test, Remedies for Heteroscedasticity.

Module 5: (a) Dummy variables - Meaning and uses of Dummy Variables, Features of Dummy Variables. (b) Lagged Variables, Uses of Lagged Variables, Estimation of Distributed Lag Model by assigning arbitrary values to Weights of Lagged Variables.

Module 6: Analysis of Variance - One-way and Two-way.

Module 7: Simultaneous Equations Model - Structural, Reduced and Final Form, Exogenous and Endogenous Variables, Identification Problems, Methods of Identification, Joint and over Identification.

NOTE: Use of Electronic Calculator will be permitted.

BASIC READING LIST

1. Gujarati, Damodar: Basic Econometrics.
2. Koopmans, A., Theory of Econometrics.
3. Klein, L.R., An Introduction to Econometrics.
4. Johnson, J., Econometric Methods (McGraw Hill).
5. Pindyck & Rubinfeld, Econometric Models and Economic Forecasts.
6. Gupta, S.C., Fundamentals of Statistics.
7. Anderson, Sumner, Williams: Statistics for Business and Economics.
8. Mehta, G.M.R., Introduction to Econometrics.
9. Shyamala, Kar & Pragnan: A Text Book on Econometrics.
10. Dharamasankar, K.: Econometrics.
11. Singh, Parman & Singh, Econometrics and Mathematical Economics.
12. Nisham, D.M., Econometrics: Theoretical Foundations and Empirical Perspective (OUP).
13. Middle, G.R., Econometrics (MacMillan).
14. Mitta and Kapoor: Fundamentals of Econometrics (Himalaya Publishing House).

M A ECONOMICS

SEMESTER - IV

EE-1 (Group-B): Monetary Economics & Policy

Module 1: Money and the Economy-Money Supply and Money Demand-Classical, Keynesian, Monetarist and Post-Keynesian views-Emergence of Monetarism-Monetarist Analytical Framework-Transmission Mechanism- Liquidity Approach to Monetary Theory-Quantity-Share Thesis, Implications for Monetary Policy.

Module 2: Money, Interest and Income -Heterogeneity of Interest Rate Determination- Neo-Classical, Keynesian and IS-LM Curve Approach - Rate of interest and Investment, Income and Output- Administered Interest Rates and Market Determined Interest Rates- Interest Rates and Demand for Money - Implications for Monetary Management.

Module 3: Money and Prices -Interrelationship between Money and Prices- Classical, Keynesian, Monetarist and New Classical Approach; Demand Pull Theory of Inflation - Social Costs of Inflation- Inflationary Expectations - The Phillips Curve and Other Factors, Monetary Factors and Economic Fluctuations, Monetary Theories of Business Cycles -Keynes, Hicks, Friedman, Schumpeter and Kalecki

Module 4: Monetary Policy -Introduction - Goals - Targets - Indicators and Instruments - Limitations of Monetary Policy - The Time Lags in the Monetary Policy - Efficiency of Monetary Policy - Monetary Policy with Informed Financial Markets - Monetary - Fiscal Co-ordination, IS-LM Curve Approach -Significance & Implication.

BASIC READING LIST:

1. Shubik Martin "The Theory of Money and Financial Institutions" (1995), Volume I and II - Cambridge, the MIT Press
2. Stiglitz, Joseph E and Bruce E. Greenwald (2001), *Towards a New Paradigm in Monetary Economics*, Cambridge, the Cambridge University Press
3. Hajela T.N (1998) *Monetary Economics*, Kanak Publishers Pvt. Limited, New Delhi
4. Sang B. Gupta (2004) *Monetary Economics, Institutions, Theory and Policy*, S. Chand & Company Limited, New Delhi.
5. Keynes, J.M., *The General Theory of Employment, Interest & Money*.
6. Keynes, J.M., *Treatise on Money*, Vols. I & II.
7. Karlhan, K.K., *Introduction to Keynesian Dynamics*.
8. Karlhan, K.K., *Keynesian Theory of Economic Development*.
9. Hansen, A. H., *A Guide to Keynes*.
10. Hicks, J.R., *A Contribution to Theory of Trade Cycle*.
11. Harris, S.E., *New Economics*.
12. Baum, Stanley, *The Economics of Cycle & Growth*.
13. Gupta, R.D., *Post Keynesian Economics*.
14. Hicks, J.R., *Critical Essays in Monetary Theory*.
15. Frisch, H., *Theories of Inflation*, Cambridge University Press.
16. Dornbusch, Fisher & Startz - *Macroeconomics*, Tata McGraw Hill.
17. Blanchard, Olivier, *Macroeconomics*, Pearson Education.
18. Habeler, *Prosperity and Depression*.

M A ECONOMICS

SEMESTER - IV

EC-1 (Group-E): Indian Public Finance

Module 1: Introduction -Nature and Scope of Public Finance - Indian Federal Finance - Historical Background - The Government of India Act 1952 -Financial and Co-operative Federalism under the Constitution - Division and Distribution of Function and Revenue between Centre and

State Governments, Role of Finance Commission Latest Finance Commission, Digitalisation & Public Financial Management System.

Module-2: Indian Tax System: Taxation and Economic Development – Direct Taxes and Indirect Taxes of both the Centre and the States, Recent Reforms in Direct and Indirect Taxes, Digitalisation & Taxation in India, Revolutionizing Tax Design & Tax Administration.

Module-3: Budget – Meaning of Budget – Importance of Revenue Budget and Capital Budget – Trends in Central Government Budget – Trends in State Government Budget with Special reference to Bihar, Deficit Financing in India – Revenue Deficit – Budget Deficit – Fiscal Deficit – Primary Deficit – Effects of Deficit Financing, Analysis of Latest Budgets of Government of India and Government of Bihar.

Module-4: Fiscal Federalism/Principles of Multi-Unit Finance – Fiscal Federalism in India – Vertical and Horizontal Imbalance, Assignment of Function and Sources of Revenue – Constitutional Provisions – Finance Commission and Planning Commission, Devolution of Resources and Grants – Revenue Transfer from Union to States – Criteria for Transfer of Resources – Centre – State Financial Relations in India, Problems of States’ Resources and Imbalances, Transfer of Resources from Union and States to Local Bodies.

BASIC READING LIST

1. David N. Hayes(2005), Public Finance: A Contemporary Application of Theory, Thomson South Western, Ohio, USA.
2. Musgrave R.A. (1979), The Theory of Public Finance, Mc Graw Hill, Kogakusha, Tokyo.
3. Anderson, John E (2003) Public Finance: Principles and Policy, Houghton Mifflin Company, Boston.
4. Gupta, Sanjeev, King, Michael, Shah, Ajayk, Vothler, Gunaviraj(2017) (Edgital Revolution in Public Finance) IMF Publications, Washington DC, USA.

**M. A. ECONOMICS
SEMESTER - IV**

EC-1 (Group- F): Urban Economics

Module-1: The Process of Urbanization. Definition of Urban Area/Census of Urbanization ,
Theories of Urban Structure and Urban Growth- Concentric Zone Theory, Central Place Theory,
Urban-Bias Theory, Features of Urbanization in Developing Countries

Module-2: Problems of Urbanization: Urban Transportation, Slums, Housing, Land Use and
Urban Renewal, Urban Water-Supply and Public Health, Urban Financial Problems.

Module-3: Urbanization in India: 21st Century Urbanization in India - Growth of Urban
Population, Urbanization without Labour Absorption in India

Module-4: Urban Development Policy in India (Policies and Programmes under the Plans,
Integrated Development of Small and Medium Towns, Urban Development and Housing Policy,
Measures to Control Urban Growth-Decentralization of Industry, Growth-Centres - Satellite towns.

BASIC READING LIST

1. Brianer A and Ravinder Singh, (edited) (1995) Housing the Urban Poor, Policy and Practice in Developing Countries, (Sage Publications, New Delhi).
2. Fred Dear, The Urban Economy (London, India Educational Publishers) 1971.
3. Harris Todson (1973), Introduction to Urban Economic Analysis and Policy (New York)
4. Leifed Rikwin and Associates (1989), Planning Urban Growth and Regional Development (London: M. T. Press)
5. Mark Garrett, (1998) Transportation Planning (Sage Publications, New Delhi)

M. A. ECONOMICS SEMESTER - II

EC-1 (Group-02: Financial Economics-I)

**Module -I: The Financial System and its significance for Economic Development - The
Structure and Functions of the Financial System in India- All India Development Financial
Institutions, Investment Institutions, Specialized Financial Institutions and State level Financial
Institutions, Non-Bank Financial Companies.**

Module-II: Commercial Banking: Banking Structure in India-Context, Need and Objectives,
Financial Sector Reforms -Narasimham Committee Report, Financial Sector Reforms with
reference to Stock Markets

Module-III: Money Market: Organized Sector of the Money Market and their Sub-Markets-Call Money Market, Treasury Bill Market, The Repo Market, Commercial Paper market and Money Market, Mutual Funds and their Instruments, Money Market Reforms in India.

Module-IV: Capital Market: Structure of Capital market- Primary and Secondary markets-New Issues and Secondary Issues Markets, Securities-Private and Public-Edged Securities- Pre and Post Reforms Capital Market in India.

BASIC READING LIST

1. Shale, L.M. (1999), *Financial Institutions and Markets*, Tata McGraw Hill Company Ltd., New Delhi.
2. Shale, L.M. (2000), *Indian Financial System*, Clough Publications, Allahabad.
3. Edwinder, R.O. (1984), *Financial Institutions, Markets and Management*, McGraw Hill, New York.
4. Goldsmith, R.W. (1969), *Financial Structure and Development*, Yale, London.
5. Hanson, J.A. and S.Kartha (Eds.) (1999), *India: A Financial Sector for the Twenty-First Century*, Oxford University Press, New Delhi.
6. Markel, P.T and S.A.Jenion (2000) (Ed.), *Performance of Financial Institutions*, Cambridge University Press, Cambridge.
7. Johnson, H.J. (1996) *Financial Institutions and Markets*, Tata McGraw Hill, New Delhi.
8. Khan, M.Y. (1996) *Indian Financial System*, Tata McGraw Hill, New Delhi.
9. Mookherji, M.R. (1999) *Indian Financial System*, Vikas Publishing House, New Delhi.
10. Ohlson, J.A. (1987), *The Theory of Financial Markets and Institutions*, North Holland, Amsterdam.
11. Prasad, K.N. (2001) *Development of India's Financial System*, Sarp & Sons, New Delhi.
12. Robinson, R.L and D.Wightman (1981), *Financial Markets*, McGraw Hill, London.
13. Smith, P.F. (1978), *Money and Financial Intermediation: The Theory and Structure of Financial System*, Prentice Hall, and Englewood-Cliff, New Jersey.
13. Chandra, P. (1997), *Financial Markets*, (4th Edition), Tata McGraw Hill, New Delhi.
14. Mookherji, H.R. (1997), *International Financial Markets in India*, Wheeler Publishing, Allahabad.
15. Rangarajan, C. (1999), *Indian Economics: Essays on Money and Finance*, OUP Publication, New Delhi.
16. Fisher, G.E. and R.J. Jordan (1992), *Security Analysis and Portfolio Management*, Eastern Economy Edition, New Delhi.

M.A. ECONOMICS
SEMESTER - II

EC-1 (Group-B): Environmental Economics

Module 1: Introduction: Introduction to Environmental Economics: Historical Perspective (Classical, Neo-classical and Modern), Interface between Economy, Environment and Development, Environment versus Development Controversy, Distinction between Environmental Economics & Natural Economics & Natural Resource Economics.

Module 2: Economics of Environmental Degradation: Pollution as Market Failure, Pareto Optimality & Market Failure, Pigorian Solutions, Buchanan's Theory, Coase Theorem, Detrimental Externalities and Non-cooperation in Production, Property Rights, Collective Action, Theories of Optimal use of Exhaustible and Renewable Resources, Kuznet's Theory of Environment, Theory of Environmental Externalities.

Module 3: Economic Incentives for Environmental Protection: Pollution Taxes, Subsidies, Government Spending, Tradable Permits, Refundable Deposits, Recycling, Health Dimension of Environment & Development, Environmental Education & Sustainable Development.

Module 4: Valuing Environment Goods and Services: Need for Valuation, The Concept of Value, Theory of Non-Market Valuation, Methods of Environmental Valuation, Direct and Indirect Methods of Environmental Valuation; Revealed Preference versus Stated Preference, Contingent Valuation, Travel Cost, Hedonic Pricing.

Module 5: Environmental Problems and Policy Issues: State of India's Environment - Air, Water and Soil Pollution, Global Warming, Acid Rain, Greenhouse Effects, Natural Resource Depletion, Deforestation, Forest Problems in India, Trans Boundary Pollution Problem, Global Warming and Climate Change, Evolution of Environmental Policy, Constitutional provisions, Institutions and Legislations, Macro Economic Policy and Environment, Natural Resources Accounting, Green GDP, Need for Environmental Accounting, Environmental Laws, Environmental Management, Government Programmes & Policies.

BASIC READING LIST

1. Dransel, W.J. and W.E. Oates (1988), *The Theory of Environmental Policy*, Second edition, Cambridge University Press, Cambridge, 299 pp.
2. Bhattacharya, R.N. (Eds) (2001), *Environmental Economics: An Indian Perspective*, Oxford University Press, New Delhi, 291 pp.
3. Gossman, M. (1988), *Environmental and Resource Economics - An Introduction*, Longman Group UK Limited London, 319 pp.

4. Conrad, J.M. (1999), *Resource Economics*, Cambridge University Press, New York, 214 pp.
5. Conrad, J.M. and C.W. Clark (1987), *Natural Resource Economics - Notes and Problems*, Cambridge University Press, New York, 207 pp.
6. Dasgupta, P. and Stiglitz, J.M. (1980), *Economic Theory and Exhaustible Resources*, Cambridge: Cambridge University Press, 1979.
7. Freeman III, A. M., R. M. Herman and A. V. Koutsoy (1973), *The Economics of Environmental Policy*, John Wiley & Sons, New York, 184 pp.
8. Hanley, N., J. Slegman, and B. White (1997), *Environmental Economics in Theory and Practice*, Macmillan Press, 464 pp.
9. Ojha, J. B. (2015), "Environmental management and market mechanism: An Institutional approach", In N. C. Saha and A. K. Choudhury (Ed.), *Dimension of Environmental and Ecological Economics*, University Press (India) Limited, Hyderabad, pp. 96-111.
10. Parikh, K. (1995), 'Sustainable development and the role of tax policy', *Asian Development Review*, Vol. 13, pp. 127-166.
11. Pearce, D. A. Mishandya and E.B. Barlow (1989), *Blueprint for a Green Economy*, Earthscan, London, 192 pp.
12. Pearce, D.W., E. Barbier and A. Mishandya (1996), *Sustainable Development: Economics and Environment in the Third World*, Edward Elgar, Aldershot.
13. Pearce, D.W., and K.K. Turner (1990), *Economics of Natural Resources and the Environment*, Harvester Wheatsheaf, London, 378 pp.
14. Pirman, R., Y. Ma, J. McGilvay, and M.S. Conroy (1999), *Natural Resources and Environmental Economics*, 2nd Edition, Longman, 564 pp.
15. Saha, M.C. and B. Nayak (1994), 'Niche diversification in Environmental Ecological Economics', *Ecological Economics*, Vol. 11, pp. 9-11.
16. Sarkar, U. (Ed.) (2001), *Environmental Economics*, Oxford University Press, New Delhi, 400 pp.
17. Tietenberg, T. (1995), *Environmental and Natural Resource Economics*, Harper Collins, College Publishers, New York, Fourth Edition, 634 pp.
18. World Bank (1992), *World Development Report: Development and the Environment*, Oxford University Press, New York, 308 pp.

M. A. ECONOMICS
SEMESTER - II'

EC - 2 (Group - B) Indian Banking & Financial Institutions

Module 1. Concept, Working and Role of Financial Market

Module 2: Structure of the Financial Market: (a) Financial Dealers (b) Money Market: Meaning, Constituents of Organized Money Market, Features of Indian Money market, Treasury bill Market & Commercial Bill Market in India (c) Capital Market – Features, Organization, Management & Membership of Stock, Exchange, Listing, Trade & Settlement System, SEBI & Capital Market.

Module 3: Financial Intermediaries: (a) Process of Intermediation (b) Commercial Banks : Role, BASEL I, II, III (Brief analysis) (c) Non Banking Financial Intermediaries : Working & Functions.

Module 4: Recent Development in Banking System in India : (a) Social Banking (b) Innovative Banking (c) Merchant Banking (d) Venture Capital

Module 5: Development Banking in India: (a) Concept and role of Development Banks in India (b) IDBI, SIDBI, NABARD

Module 6: Monetary and Credit Policy of R.B.I: (a) Prerogative role of R.B.I. (b) Regulatory role of R.B.I

Module 7: Recent Banking and Financial Reforms in India : (a) Main Recommendations of Sukteswara Chakravarti Committee Report (b) Main Recommendations of Narasimham Committee Report. Financial Inclusion-Concept, Needs and Efforts by the State like Jan Dhan Yojana, Mudra Yojana, Creditless Economy: Needs, Constraints and efforts so far.

BASIC READING LIST

1. R.B.I Functions and Working
2. Dutt, Bhabder and Sundharan, E.P.M Indian Economy, S. Chand and Co.
3. Basu, C.R., Central Banking in Planned Economy
4. Narasimham Committee Report
5. Chakravarti Committee Report
6. Report on Currency and Finance (R.B.I Annual)
7. Sen, S.N., Central Banking in under Developed countries
8. R.B.I. Bulletin.
9. L.M Bhale - Financial institutions & Markets (Tata McGraw Hill)
10. M.Y Khan, Financial Institution & Markets (Tata McGraw Hill)
11. Mishkin FS & Fuhrer SD - Financial Market & "Institutions" (Pearson Education)

B.A. ECONOMICS
SEMESTER - IV*

EC-2 (Group-B)- Industrial Economics-II

Module -1 Indian Industrial Growth & Pattern: Industrial Pattern Under Five Year Plan, Industrial Policy 1991, Role of Public and Private Sector, Recent Trends in Industrial Growth Small Scale Enterprises, Problems of SSBs and Sickness, Rural Industrialization and its need in India.

Module -2 Liberalization, Privatization in India: MNCs and Transfer of Technology-Industrial Economic Concentration and Remedial Measures, Issues in Industrial Regulation and Environmental Preservation.

Module -3 Industrial Finance: Industrial Finance: Owned, External and other Components of Funds, Role, Nature, Volume and Types of Institutional Finance – State Level Financial Institutions and Commercial Banks.

Module -4 Financial Soundness Assessment of Industrial sector: Financial Statement – Balance Sheet, Assets and Liabilities, Profit & Loss Account, Ratio Analysis.

BASIC READING LIST

1. Ahluwalia, I.J. (1983) *Industrial Growth in India*, Oxford University Press, New Delhi.
2. Barlow, R.R. (1985), *Industrial Economics*, Wiley Eastern Ltd., New Delhi.
3. Cheredian, F. (1994), *Industrial Economics: Indian Perspective* (3RD Edition), Himalaya Publishing House, Mumbai.
4. Desai, B. (1999), *Industrial Economy in India* (3rd Edition), Himalaya Publishing House, Mumbai.
5. Dring, P.J. and R.M. Jones Ed. Al (1976), *An Introduction to Industrial Economics*, George Allen and Unwin Ltd., London.
6. Government of India, *Economic Survey (Annual)*
7. Hry, D. and D.J.Morris (1979), *Industrial Economics: theory and evidence*, Oxford University Press, New Delhi.
8. Kachhal, S.C. (1988), *Industrial Economy of India* (5th Edition), Chaitanya Publishing House, Allahabad.
9. Reserve Bank of India, *Report on currency and Finance (Annual)*
10. Singh, A and A. N. Sahoo (1988), *Industrial Economics*, Himalaya Publishing House, Mumbai.

M. A. ECONOMICS
SEMESTER - II

EC-2 (Group-C): Demography

Module 0: Introduction: Meaning, Scope and Importance of Demography; Sources of Demographic Data, Population and Economic Development, Demographic Dividend

Module 1: Theories of population —Malthus, Optimum Theory of Population, Theory of Demographic Transition, Views of Meadows and Fiske on Population.

Module 2: Concept and Measurement of Fertility and Mortality: (a) Importance of Study of Fertility — Total Fertility Rate, Gross Reproduction Rate and Net Reproduction rate; Levels and Trends of Fertility in more and less Developed Countries; Factors affecting Fertility -Socio-Economic Factors, Economic Status, Health, Education, Nutrition, Caste, Religion, Race, Region, Rural-Urban and Status of Husband and Wife. (b) Mortality — Death Rates, Crude and Age-specific, Mortality at Birth and Infant Mortality Rate, Life-table- Construction and Uses, Concepts of Stationary and Stable Population Human Development Index.

Module 3: Methods of Population Projection.

Module 4: Migration and Urbanisation: Concept and Types: Temporary, Internal and International, International Migration: Its Effect on Population Growth and Pattern; Factors affecting Migration; Theories of Migration related to Internal Migration; Urbanization: Growth and Distribution of Rural-Urban Population in Developed and Developing Countries.

Module 5: Demographic Data Base in India: Changing Characteristics of Population in India, Population Growth Rates, Trends and Regional Variations in Sex Ratio, Age Structure of Population, Infant and Child Mortality Rates, Maternal Mortality Rates, Life Expectancy, on the basis of Census of India & Latest Round of National Surveys conducted in India.

Module 6: Population and Development with reference to India and Bihar: Population, Economy and Environment Linkages-Population and Human Development Issues, Human Development Index, Demographic Dividend-its role in India and Bihar.

Module 7: Population Policy in India: Evolution of Population Policy in India — The shift in policy from Population Control to Family Welfare, to Women Empowerment, Family Planning Strategies and their Outcomes, The New Population Policy, Tasks before the National Population Commission.

BASIC READING LIST

1. Malthus, T.R.: *An Essay on the Principle of Population*.
2. Zachariae, E. & Saha, P.C. *Elements of Demography*.
3. Agarwal, R.N., *India's Population Problem*, Tata Mac Graw Hill, Mumbai.
4. Bose, A., *India's Basic Demographic Statistics*, B.R. Publishing Corporation, New Delhi, 1996.

5. Chandrasekhar, S., Infant Mortality, Population Growth and Family Planning in India, Routledge, 2011.
6. Chandra, Gnan, Population in Perspective
7. Dutt, K., Sundaram, K.P.M., Indian Economy (Latest Edition)
8. Human Development Report(s) UNDP
9. India Human Development Report: Institute of Applied Management Research, Planning Commission, Government of India
10. Economic Survey: Ministry of Finance, Government of India
11. Uma Kapila (Edited), Indian Economy since Independence, Academic Foundation, New Delhi

M. A. ECONOMICS
SEMESTER - II'

EC-2 (Group- B): Agri- Business Management

Module 1: Agri- Business: meaning, Definition, Structure of Agri -Business/Agri Sector, Farm sector and Product Sector's Importance of Agri Business in Indian Economy

Module 2: Agri/Business Management: The Distinctive Features, The Importance of Good Management, The Definition of Management Economics of Agri - Business Management

Module 3: Management Functions: Planning, Characteristics of Sound Plan/Steps in Planning & Organizing-Meaning-Purpose-Staffing- Definition, Staffing Process,Directing-Motivation-Ordering-Leading-Supervision-Communication and Control-Meeting and Definitions.

Module 4: Capital Meaning-Working Capital-Gross Working Capital-Net Working Capital-Permanent Working Capital-Temporary Working Capital-Balance Sheet Working Capital-Cash Working Capital.

Module 5: Financial Management: Importance of Financial Statements-Balance Sheet-Profit and Loss statements, Analysis of Financial Statements-Liquidity Ratio-Leverage Ratio-Coverage Ratio-Turnover Ratio-Profitability ratios.

Module 6: Agri Based Industries:Importance, Need-Institutional Arrangements for the Promotion of Agri Based Industries, Procedures to be followed to set up Agri Based Industries, Constraints in Agri Based Industries, Remedies and Effort so far in providing enabling environment for promotion of Agri- Business in India.

Module 7: Project Meaning-Definition-Project Cycle-Identification-Formulation-Appraisal-Monitoring-Evaluation,Project Evaluation and Appraisal Techniques-Undiscounted Measures-Discounted Measures-Sensitivity Analysis.

BASIC READING LIST

1. Chatter G.I. and James CW, "Agricultural Economics and Agri-Business" John Wiley & Sons, New York, 1979
2. Omer Baling, "Introduction to Agribusiness" PFI New Jersey
3. V.K. Srivastava, "Project Planning, Functioning, Implementation and Evaluation" Center for Management in Agriculture, IIM Ahmedabad, 1983.
4. FAO, "Economic Analysis of agricultural policies" Harvard Institute for International Development" FAO, 1995
5. Harsh SB, Connor D and Schwab, "Managing the Farm Business" PFI, New Jersey, 1981
6. Singh, L.I, Elements of Farm Management Economics, Affiliated East-West Press Pvt. Ltd, 1977

M. A. ECONOMICS

SEMESTER - II'

EC-2 (Group-B): Labour Economics

Module I: Labour Market: Nature and Characteristics of Labour Markets in Developing Countries; Paradigms of Labour Market Analysis- Classical, Neo-Classical and Dualistic Economy; Demand for Labour in relation to Size and Pattern of Investments; Supply of Labour in relation to Growth of Labour Force; Segmented Labour Markets- Discrimination in Labour Market, Labour Flexibility, Informal Sector

Module II: Theories of Wage determination: Classical, Neo-Classical, Marginal Productivity and Modern Theories, Collective Bargaining and Wage Determination- Basic Postulates, Nature of Bargaining Process, Systems of Wage Payment, Incentive Wage Payment, Minimum Wage, Living Wage and Fair Wage, Wage Differentials and Wage Regulation, Bonus Systems and Profit Sharing, Economy to High Wages, Wage Policy; salient Features of Trade Union Movement in India.

Module III: Concept: Concept, Measurement and Policy Response, Conditions of Decent Work.

Module 4: Introduction to Labour Statistics, Labour Commission in India: Recommendations of NCUS

BASIC READING LIST

1. Bhargava, T. N., Economics of Labour and Social Welfare.
2. Dutt, G. Bargaining Power, Wages and Employment: An Analysis of Agricultural Labour Market in India.
3. Government of India: Reports of the National Commission on Labour.
4. Hallon, G.C: Dynamics of Social Security.
5. Hicks, J.R: The Theory of Wages.
6. Populu, T.S. and Sharma, A.N (Ed.) Gender and Employment in India

7. Poulak, S.D., Labour Welfare, Trade Unions and Industrial Relations.
8. Sharma, A.N. and A. Kaula (Ed.) Informal Sector in India: Emerging Perspectives.
9. Chit, V.V. Labour Problems in Indian Industry.
10. Das, Rakesh, Growth, Poverty and Equity.

B.A. ECONOMICS
SEMESTER - II*

EC-2 (Group-B) Gender Economics

Module-I-Introduction (Defining Gender, Debate on Women and Development (1970s and 1980s)The Origin of Gender Development Theory - Women in Development (WID), Women and Development (WAD) and Gender and Development (GAD), Critique of WID, Gender in Economics Development.

Module-II Gender and Agrarian Structure-Gender Aggregated Role and Responsibility in Agriculture Sector; Gender-Segregated Agriculture Labour - Market, New Farm Technology and Its Gendered Implications with special reference to India, Displacement of Labour

Module-III-Gender and Industrial Structure-Formal and Informal Manufacturing - Orientation of Industrial Production and Generation of Employment, Gender Differentiated Impact of Economic Liberalization and trade oriented growth.

Module-IV- Gender and Economic Policy-Poverty, Unemployment and Development, Feminization of Urban Labour Market-Concepts, Debate and Evidence from India, Committee on Status of Women in India, National Commission on Self-Employed Women and Women in the Informal Sector.

BASIC READING LIST

1. Agarwal Rina, Patriarchy and and Mobilizing State: An Introduction to Agrawal Rina (ed.) Structure of Patriarchy, Kali for women, New Delhi, 1988
2. Banks, Olive, Faces of Feminism: A Study of Feminism as a Social Movement, St. Martin's Press, New York, 1981
3. Bhalla and Khan, Some Questions on Feminism, Kali of Women, New Delhi, 1986.
4. Caplan, Pat (ed.) The Cultural Construction of Sexuality, Basil Jolpa, New York, 1987.
5. Desai Nirmal and Kishoreng, Mathohri (ed.), Women and Society in India, Ajanta Publication, New Delhi, 1987.

M.A. ECONOMICS
SEMESTER - II
EC-2 (Group - G) Financial Economics - II

Module-I: Securities Exchange Board of India: National Stock Exchange of India (NSE) and Capital Market Development. Changing Roles of SEBI related to Primary Market, Mutual Funds and its Promoters.

Module-II: Concept and Significance of Insurance - Types of Insurance - The Growth and Structure of LIC and GIC of India - The Role of Private Insurance in India.

Module-III: Mutual Funds - Organization, Types of Schemes, Growth, Structure and size of Mutual Funds in India.

Module-IV: Critical review of Indian financial system: Comparative Performance of Money Market and Capital Markets in India. Concerns and Challenges for Future of Financial Structure Development in India, Financial Theory of Financial Institutions.

BASIC READING LIST

1. Blais, L.M. (1999), *Financial Institutions and Markets*, Tata McGraw Hill Company Ltd., New Delhi.
2. Blais, L.M. (2000), *Indian Financial System*, Clough Publications, Allahabad.
3. Edlinster, R.O. (1996), *Financial Institutions, Markets and Management*, McGraw Hill, New York.
4. Goldsmith, R.W. (1969), *Financial Structure and Development*, Yale, London.
5. Hanson, J.A. and S.Kalhoris (Eds.) (1999), *India: A Financial Sector for the Twenty- first Century*, Oxford University Press, New Delhi.
6. Hester, P.T. and S.A. Zentis (2000) (Ed.), *Performance of Financial Institutions*, Cambridge University Press, Cambridge.
7. Johnson, H.J. (1996) *Financial Institutions and Markets*, Tata McGraw Hill, New Delhi.
8. Khan, M.Y. (1996) *Indian Financial System*, Tata McGraw Hill, New Delhi.
9. Mishraji, M.R. (1999) *Indian Financial Systems*, Vikas Publishing House, New Delhi.
10. Orlison, J.A. (1987), *The Theory of Financial Markets and Institutions*, North Holland, Amsterdam.
11. Prasad, K.N. (2001) *Development of India's Financial System*, Scarp & Sons, New Delhi.
12. Robinson, R.J. and D.Wrightman (1981), *Financial Markets*, McGraw Hill, London.
13. Smith, F.F. (1978), *Money and Financial Intermediation: The Theory and Structure of Financial System*, Prentice Hall, and Englewood-Cliff, New Jersey.
14. Chandra, P. (1997), *Financial Markets*, (8th Edition), Tata McGraw Hill, New Delhi.
15. Mishraji, H.R. (1997), *International Financial Markets in India*, Wheeler Publishing, Allahabad.

16. Rangarajan, C. (1999), *Indian Economics: Essays on Money and Finance*, CBS Publication, New Delhi.
17. Fisher, G.E. and R.J. Jordan (1992), *Security Analysis and Portfolio Management*, Eastern Economy Edition, New Delhi.
18. Apte, *International Financial Management* Tata, Mc Graw Hill Publishing Company, LTD, New Delhi.

B.A. ECONOMICS

SEMESTER - IV

EC-2 (Group-B): Time Series Econometrics

Module 1: Time-Series Analysis - Components of Time Series, Measurement of Trend by Semi-Average Method, Moving Average Method and Method of Least Squares (Linear and non-Linear Trends) Estimation of Exponential, Modified Exponential, Gompertz and Logistic Curve Relations, Measurement of Seasonal Variations, Method of Simple Average, Method of Moving Average, Link Relatives Method, Ratio to Trend Method and Ratio to Moving Average Method.

Module 2: Time Series Regression & Serial Correlation

Module 3: Time Series Econometrics: (a) Key Concepts, Stationary Stochastic Process, Non Stationary Stochastic Process, Random Walk Models (with and without drift), Unit Root Stochastic Process. (b) Transforming Non-Stationary Process: Difference Stationary and Trend Stationary Processes. (c) Concept of Integration, and (d) Spurious Regression.

Module 4: Unit Root Test - Dickey-Fuller (DF) Test, Augmented Dickey-Fuller (ADF) Test, The Phillips - Perron (PP), Unit Root Tests, Unit Root Test Procedure.

Module 5: Co-integration Models - Testing for Co-integration: Engle-Granger Test, Dickey-Watson Test, Co-integration and Error Correction Mechanism (ECM).

Module 6: Methods of Forecasting Properties of AR, MA & ARMA Processes, ARIMA Process (Box-Jenkins Methodology), Vector Auto-regression (VAR).

NOTE: Use of Electronic Calculator will be permitted

BASIC READING LIST

1. Gujarati, Damodar: *Basic Econometrics*.
2. Koutsoyiannis, A., *Theory of Econometrics*.
3. Klein, L.R., *Introduction to Econometrics*.
4. Johnson, J., *Econometric Methods* (McGraw Hill).
5. Pindyck & Rubinfeld, *Econometric Models and Economic Forecasts*.
6. Gupta, S.C., *Fundamentals of Statistics*.
7. Anderson,weeney, Williams: *Statistics for Business and Economics*.

Recommended (ARIMA) Processes, VAR and Processes involving cointegration.

8. Malinvaud, O.M.K., Introduction to Econometrics.
9. Shyamala, Kavi & Pragasam: A Text Book on Econometrics.
10. Dharmasakar, K.: Econometrics.
11. Singh, Pannar & Singh: Econometrics and Mathematical Economics.
12. Nachane, D.M., Econometrics: Theoretical Foundations and Empirical Perspectives (GUP)
13. Maddala, G.S., Econometrics (MacMillan)
14. Mehta and Kapoor: Fundamentals of Econometrics (Himalaya Pub. House)

M. A. ECONOMICS
SEMESTER – II*
EC- 2 (Group- B): Project Work

DISSERTATION FORMAT

Dissertation: Master of Arts(M.A.) in Economics

General Guidelines

1. Selection of a Topic
2. Pilot Survey, if needed
3. Significance of the Study
4. Review of Literature
5. Research Gap (Optional)
6. Theoretical Framework (Optional)
7. Formulation of Research Questions/ Issues
8. Research Objectives
9. Hypotheses (Optional)
10. Coverage (Universe/ Sample & period of study)
11. Data Source (Primary / Secondary)
12. Tools of Analysis (Analytical Framework)
13. Limitations of the Study
14. Chapter Outlines
15. Introductory Chapter
16. Result Chapter (s)
17. Conclusion Chapter
18. Appendix
19. Bibliography / References & Weblogography

Structure of the Report

Title page-1 Cover Page

- a. Title Page
- b. Title of the Project
- c. Name of the Candidate

- d. Name and Designation of the Supervisor
- e. Degree for which Project is Submitted
- f. Name of the College/University
- g. Month and Year, the project is Presented
- h. Declaration of the Student & Supervisor

1.2 Preface

1.3 Table of contents

- a. List of Tables
- b. List of Figure
- c. List of Abbreviations
- d. Acknowledgment

1.4 Abstract / Executive Summary (One page)

1.5 The Main Text

- a. Introductory Chapter: ... 03 to 16 mentioned above
- b. Other Chapters: Analysis, Results Interpretation
- c. Conclusion Chapter: Summary, Conclusion, Recommendations.

1.6 End Notes (after each Chapter)

1.8 Bibliography or References (at the end of the Project)

1.9 Appendices:

- a. Questionnaire
- b. Interview Schedule
- c. Observation Schedule (Optional)
- d. Coding Frame (Optional)
- e. Letters sent to Sample members (Optional)
- f. Any other

Length of the Project:

Note:

1. Report length 40 to 50 pages excluding Appendix and Certificates
2. Alignment : justify
3. Font : Times New Roman
4. Font Size : 12
5. Line Spacing : 1.5

M A ECONOMICS
SEMESTER - II

BSE - I (Group - A): Fundamentals of Economics

Module-I Meaning of Economics, Micro & Macro Economics Central Problems of an Economy-Concepts of Production Possibility Frontier and Opportunity Cost, Utility Analysis Law of Demand, Elasticity of Demand, Consumer's Surplus.

Module-II Concept of Cost & Revenue, Malthusian Theory of Population, Definition of Markets, Price Determination in Perfect Competition and Monopoly Theories of Distribution-Rent, Interest, Wages & Profit.

Module-III National Income Accounting -Basic Concepts of GDP, NSP, NDP, GNP Money-Concept and functions, Causes and Control of Inflation Functions of Central Bank, and Commercial Banks Concept of Budget, Monetary and Fiscal policy, Quantitative theory and Saving- Investment Theory of Money.

Module-IV Functions of IMF and World Bank, Taxation -Types of Taxes, Principles of Maximum Social Advantage, Ability to Pay Theory, Increasing Public Expenditure-Causes & Effects, Role of International Trade in Economic Development, Comparative Cost Theory of International Trade, Concept of Foreign Direct Investment, Role of MNCs in Economic Growth.

BASIC READING LIST

1. Koutsoyannis (1979), *Modern Microeconomics*, International Edition, Palgrave Macmillan.
2. Varian, Hal R. (1992), *Microeconomic Analysis* 2nd edition, W.W. Norton & Company, New York.
3. Feiwel, R.S., Rubinfeld, D.L. and Mohr, P.L., (2013), *Microeconomics*, 6th edition, Prentice Hall.
4. Mankiw, G. N. *Principles of Macroeconomics*, 9th edition, Macmillan Learning.
5. Davidson, P., Forster, S and Forster, R., (2013), *Microeconomics*, 11th edition, McGraw Hill.
6. Blanchard, O., *Microeconomics*, 4th Edition, Prentice Hall.
10. Salvatore, D. and Real, (2013), *International Economics* 11th edition, Wiley.
11. Salvatore, B.G (1991), *International Economics*, Macmillan.
12. Singh, M.L. *Modern Micro Economics*, Vista Publication Pvt. Ltd.

B.A. ECONOMICS

SEMESTER - II

ISE- I (Group-B): Indian Rural Development

Module-1: Introduction to Rural Development: Meaning of Rural Development- Basic Elements of Development- Objectives of Development- Strategies of Rural Development-Rural Development Theories, Approaches: Gandhian Approach- National Approach-Target Group Approach-Area Approach and Integrated Approach.

Module-2: Rural Economy of India (Rural Measures-Rural Income-Size, Growth and Occupational Structure of Rural Population- Problems of Unemployment-Poverty-Causes and Consequences of Poverty in India-Policies for Rural Development-Need for Rural Development Policy-Rural Development under Five year Plans.

Module-3: Rural Development Programmes in India-Types of Rural Development Programmes in India- CDP, SFDA, MFAL, DPAP, IRDP-Block Plan NRIF, RLIEP, JRY, DWCRA, TRYF, TRYSEM- Rural Employment Guarantee Programme, Latest Initiatives taken by the Government for Rural Development.

Module-4: Rural Agriculture and Rural Infrastructure (Perspectives and Approaches- Agriculture and the Rural Economy of India-Planning for Village Industries Growth and Development of Rural Industries in India-Rural Industrial Cooperatives-Rural Infrastructure- Rural Transport-Rural Electricity-Rural Education-Rural Housing-Rural Health, Sanitation, Water Supply-Role of Infrastructure in Rural Development, Democratic Decentralisation- Panchayati Raj System in India.

BASIC READING LIST

1. Narvel, M.B. & Anjaria, J.J., *The Indian Rural Problem*, Indian Society of Agricultural Economics.
2. Tyagi, B.P., *Agricultural Economics and Rural Development*, J. Nath & Company.
3. Dhingra I.C. *Rural Economics*, S.Chand and Sons, New Delhi.
4. Shivan Maheswari, (1997) *Rural Development in India: A Public Policy Approach*, Sage publishers, New Delhi, 1999.
5. Katar Singh, (1986) *Rural Development, Principles, Policies and Management*, Sage Publishers, New Delhi.
6. Dutt, Roshdi & Sahastran, L.P.M., *India Economy*, S. Chand & Company.
7. Govt. of India, *Economic Survey (Annual)*.

M. A. ECONOMICS
SEMESTER - II

ISE- I (Group-C): Planning and Economic Development in India

Module 1: Nature of Economic System – Capitalism, Socialism and Mixed Economy – their Characteristics, Merits & Demerits, Significance of Planned Economic System.

Module 2: Economic Planning—Meaning, Objectives, Scope and Importance of Economic Planning—Types of Economic Planning—Economic Planning in an Under-developed Economy, Essentials of Planning, Steps in Planning in India, NITI Aayog.

Module 3: Economic Development of India: Concept of Economic Development Basis of Economic Development, Characteristics of a Developing Economy, Problems of Economic Development in a Developing Country, Role of state in growth and industrial Development in a country, Features of Under-developed countries with special reference to India, Obstacles to Development and Measures for Economic Development—Physical and Economic Environment and its influence on the Economic Development of India.

Module 4: Indian Agriculture—Importance and Main Problems in the Development of Agriculture in India Land Reforms in India, Sub-division and Fragmentation of Land-holding—Fixation of Ceiling, Consolidation of Holding and Co-operative Farming—Agriculture Inputs such as Fertiliser, Irrigation and Mechanisation—Marketing of Agriculture Produce, Problems of Agriculture Labour, Economic Condition of Indian Farmers—Rural Indebtedness—Five Year-Plans and Agriculture—New Agricultural Policy of the Government of India, Food Problems, and Food Production in India, Food security in India.

Module 5: Industrialisation: Problems of Industrialization in India, Industrial Policy of the Government of India -Licensing Policy—Growth of Public-Sector—Large Scale Industries—Problems and Present Position -Iron and Steel, Cement, Cotton Textile, Jute, Sugar, Importance of a Small Scale and Cottage Industries, Problems of Rural Artisans Industries and Five-year-Plans, Means of Transport—Development of Railways and Road Transport.

Module 6: Trends and Special Features of Foreign Trade—Tariff protection, Demonetisation, Digitalisation, Financial Inclusion—recent Initiatives, Creditless Economy.

BASIC READING LIST

1. A.W Lewis — Principles of Economic Planning.
2. Datta and Sundaram — Indian Economy.
3. M. L. Bhaugikar — Economic Growth and Development.
4. Ashok Ghosh — Indian Economy.
5. K. N. Prasad — Problems of Economic Development.
6. Chaman Singh — Economic Nightmares of India, its causes and cure.
7. K.P.M. Sundaram — Indian Economy.

8. C.B. Menon—Eminent Ka Arthik Vilas
9. Iyengar, Krishna Sahai—Eminent Ka Arthik Vilas
10. Dr. Deveshwar Prasad Singh—Eminent Ka Arthik Samachar Ka Hindustan
11. Sheelbhar Pandey—Eminent Ka Arthik Vilas
12. Charan Singh—Eminent Ka Arthik Neeti
13. Five Year Plans—Government of India
14. Jain, P. C.—Eminent Ka Arthik Samachar
15. K. K. Desai—Indian Economy

B. A. ECONOMICS
SEMESTER - II'

BSE- I (Group- B)- Personnel Management & Industrial Relation

Module I: Definition and Scope of Personnel Management, Functions of Personnel Management- Managerial Functions -Operative Functions-Qualities of a Personnel Manager, Growth of Personnel Management-Stages of Evolution of Personnel Management, Human Resource Management and Personnel Management.

Module II: Manpower Planning-Process of Man Power Planning- Importance of Human Resource Planning-Job Analysis, Recruitment and Selection- Sources of Recruitment-Internal and External Sources-Methods of Recruitment-Direct, Indirect and Third Party Methods-Steps in Selection Process-Tests-Interview-Types of Interviews-Qualities of good Interviewer, Placement-Induction-Objectives of Induction, Training-Importance of Training-Methods of Training-On the Job Methods-Off the Job Methods.

Module III: Job Charges-Promotion, Demotion, Transfer- Lay off-Job Evaluation-Methods of Job Evaluation-Ranking Method, Grading Method, Factor Comparison Method, Merit Rating and Performance Appraisal.

Module IV: Industrial Relation-Definition-Objectives of Industrial Relation-Participants of Industrial Relation, Industrial Dispute-Forms of Dispute-Types of Dispute, Prevention mechanism, Methods of resolving Industrial Disputes, Strikes- Causes and Impact.

Module V: Growth of Labour Movement - Growth Pattern and Structure of Labour Unions in India, Achievements and Failures of Labour unions.

Module VI: Work Participation Rate in India-Factors determining Work Participation Rate, Characteristics of Indian Labour-Employment and Wages in Rural India.

Module VII: Social Security- Concept, Government measures, Labour Laws - Minimum Wages Act, Factories Act, Employees State Insurance Act 1948, Provident Fund and Miscellaneous Provisions Act 1952, National Commission on Labour.

BASIC READING LIST

1. C.D. Muzoria, *Personnel Management*, Himalaya publishing house
 2. B.S. Datta: *Personnel Management and Industrial relations in India*, Vikas Publishing House Pvt. Ltd.
 3. Dale Yodanis, *Personnel Management and Industrial Relations*, Prentice-Hall of India, New Delhi
 4. Edwin B. Flippo: *Principles of Personnel Management*, Mc Graw - Hill's Knowledge, Ltd.
 5. K.K. Ahuja: *Personnel management*, Kalayani Publishers, New Delhi
 6. RFP Learning Media: *Human resource management*, Viva Books, New Delhi
 7. G.P. Sinha and P.R.H. Sinha: *Industrial Relations and Labour Legislations*.
 8. R.K. Das: *Principles and Problems of Labour Legislation*
 9. H.K. Dhar- *Handbook of Labour Laws*.
 10. Govt. of India- *Report of the National Commission on Labour*, Report of the National Commission on Rural Labour.
 11. Charles A. Myers- *Industrial Relations in India*.
 12. E.M. Burns- *Social Security*.
 13. I.L.O- *Problems of Social Security*.
 14. *Indian Journal of Labour Economics*
 15. V.B. Karrik - *Indian Trade Union Movement*
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M. A. English CBCS Course

University Department of English

B. R. A. Bihar University, Muzaffarpur

Note

A meeting of Heads of Departments across the Universities of Bihar and the Departmental Council (P.U.) was convened in the Department of English, Patna University on 7th May 2018 in which the M A English CBCS syllabus was discussed and unanimously approved.

Certain structural changes have been made in conformity with the draft regulations received by the Department after that date. The course content, However remains unaltered. We wish to make certain observations and suggest changes in the draft regulations pertaining to the allotment of marks in part A B and C.

In part A the marks allotted for the objective type multiple choice questions may

Be changed to 10x1=10. This change will reduce the possibility of the use of unfair means in the examinations and is likely, therefore, to reflect the true merit of the student.

In Part B, the short answer questions will include reference to the context requiring critical analysis. The inclusion will encourage detailed reading of prescribed texts so that our students are able to engage more intensively and meaningfully with the syllabus. In doing so their ability to compete at par with their peers across the country and overseas will be significantly enhanced. The allocation of marks will therefore be 4x6=24.

Correspondingly, the marks allocation in part C, that requires extensive and detailed interpretation of texts, (not more than 350 words). Need to be altered to 3x12=36. The total marks thus add up to 70 for the End Semester Examination.

These alterations are urged in the best interests of the academic community in its maintenance of minimum standards in Higher education.

CBCS Scheme of Examination and Courses of Study for the M.A. Examination in English

VISION

The Vision of the Department of English comprises a responsible reevaluation of a rich scholastic tradition and focuses on the dynamics of future challenges to build a scholarly community engaged in committed teaching, quality research, co-curricular and socially productive activities. Encouragement is provided to value scholarship, skills and wisdom with fearless intellectual integrity and artistic freedom to facilitate a microcosm of an enlightened civilization. The aim of the Department is to strike a balance between creativity and critical thinking. The focus is on the study of diverse literatures, criticism, communication of ideas and development of new perspectives through theoretically informed interpretations. The Department promotes interactive scholarship, debating intellectual pursuits to create knowledge without borders, thus investing in 'thinking', 'questioning' and 'exploring' what is beyond. The students are encouraged to use the library and access online journals as resources of knowledge. Presentations, seminars and films are facilitated by the use of

Approved
1.5.18
K. Prasad
Head of Dept
English
B. R. A. Bihar
Univ. Muzaffarpur
JCT.

V. Singh
01.04.19
S. K. Singh
01/04/19
S. K. Singh
01/04/19

S. K. Singh
01.04.19
S. K. Singh
01/04/19

S. K. Singh
01/04/19

MISSION

Our responsibilities to civil society are to facilitate professional competence, socially conscientious human resource, encourage leadership qualities and cultivate positive interests, attitudes and moral intellectual values. Emphasis will be laid on critical thinking and textual analysis through theoretically informed perspectives to enable a nuanced understanding of the word and the world.

Conscientising students towards gender, class, caste, race, disability and non-human ecology is a priority. Apart from critical engagement with texts, opportunities shall be provided to students to realize their potential in cultural and creative areas, encourage communicative competence, independent initiatives and use their imagination to envisage justice in the quest of building a society and a civilization that respects diversities and equality. The M.A. English syllabus comprises 14 Core courses (CC), two Elective courses (EC), One Generic Elective (GE) OR Discipline Specific Elective Course (DSE), one Ability Enhancement Course (ACE) and two Ability Enhancement Compulsory Courses (AECC) in evaluation and the teaching will be structured accordingly.

Structure of the 2 yrs (Four Semesters) Post Graduate Degree course under CBCS :

SEMESTER	No of COURSE E/ Papers	Credit Per COURSE E/ Paper	Total Credit	Minimum No of Learning Hours	No of CORE COURSE E/ Paper	No of ELECTIVE Course/ PAPER	Code & Nature of Elective Course or Paper
I	05	05	25	250	4	1	AECC -1
SEMESTER BREAK							
II	06	05	30	300	5	1	AEC-I
SEMESTER BREAK							
III	06	05	30	300	5	1	AECC -2
SEMESTER BREAK							

K. Ramesh
01.04.2019

Sanjay
15/4/19

Vinayak
15/4/19

Atul
15/4/19

22/4/19

Chandru
15/4/19

Me
01.04.19

1/4/19

Abhishek
1.5.19

1/4/19

IV	03	05	15	150	0	3	EC-1* EC-2* DSE-1 or GE-1
Total	20		100	1000	14	6	

Core Course (CC): A course which should compulsorily be studied by a candidate as a core Requirement on the basis of subject of MA studies and is termed as Core course.

Elective Course (EC): Generally a course which can be chosen from a pool of courses (Basket) and which may be very specific or specialized or advanced or supportive to the subject/discipline/domain or nurtures the candidate's proficiency/skill is called an Elective Course. Discipline Specific Elective Course (DSE): Elective course may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study.)

Generic Elective (GE) Course: An elective course chosen generally from an unrelated discipline /subject, with an intention to seek exposure is called a Generic Elective. P.S.:A core course offered in a discipline/subject may be treated as an electives may also be referred to as Generic Elective. **Ability Enhancement Courses (AEC):** The Ability Enhancement Courses (AEC) /Skill Enhancement Courses (SEC). "AEC" courses are the courses based upon the content that leads to life skill enhancement.

Ability Enhancement Compulsory Courses (AECC): University will run a number of a Ability Enhancement Compulsory Courses (AECC) which is qualifying in nature and student from all faculties have to qualify in all courses.

Dissertation/ Project/ Internship/ Industrial Training : An elective course designed to acquire special/Advanced knowledge, such as supplement study/support study to a project work and a candidate Studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

The distribution of the six elective papers shall be –two EC, one DSE or one GE, two AECC, one AEC. Students may opt for any elective course out of a list of elective papers (Basket) offered by the parent department or any other department/s as per his/her choice with the prior permission of the parent department.

The Final CGPA/class will be decided on the performance of the student in the 16 courses including the 14 Core Courses (CC) and two ECs.

The one DSE or one GE, two AECC, one AEC courses will be qualifying in nature and a student has to score at least 45% marks in these courses. Grades will be awarded separately.

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for these courses, however, performance in these elective courses will not be considered for awarding the final CGPA/class.

MA

Semester 1 : CC- 1 to CC- 4 AECC-1

Semester 2 : CC-5 to CC-8 plus AEC-1

Semester 3: CC-10 to CC-14 plus AECC-2

Semester 4:EC-1 and EC-2 plus DSE-1 or GE-1

Evaluation of Performance under Semester System

The performance of a student in each paper will be assessed on the basis of a Continuous Internal Assessment (CIA) of 30marks and the End of Semester Examination (ESE) Consisting of 70 marks.

The components of C.I.A. are follows :

Two mid-semester written tests of one hour duration each =	15 Marks
Seminar/Quiz	=05 Marks
Assignment	=05 Marks
Punctuality and conduct	=05 Marks
Total	=30Marks

The performance of a student in the elective papers AEC and AECC in each semester addressing the issues of i. Skill Development, ii. Human Values and Professional Ethics and Gender Sensitization iii. Environment and Sustainability and Swachhtha Bharat Abhiyan Activities shall be assessed on the basis of a continuous Internal Assessment (CIA) of 30 marks and the End Semester Examination (ESE) consisting of 50 marks.

The components of C.I.A.in these papers shall be as follows :

One mid-semester written tests of one hour duration each =	10Marks
Seminar /Quiz	=10Marks
Assignment	=15 Marks
Discharge of Intitutional Social Responsibility	

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Community Services (report to be submitted)	=15 Marks
Total	=50Marks

The End of Semester Examination (ESE) shall be named as follows :

M.A. Part (I) – Semester I Examination

and Semester II Examination respectively.

M.A. Part (II) – Semester III Examination

and Semester IV Examination respectively..

Syllabus for each paper shall be divided into at least 5 units.

Based on this, the question paper pattern for the End Semester Examination shall have divided into three parts A,B,C comprising

of objectives type questions with multiple choice, short answer type questions and long answer type questions respectively as mentioned below :

Part - A

Ten objective type Questions- All questions to be answered (Questions shall be picked up from the whole syllabus Preferably two question from each unit) $10 \times 1 = 10$ Marks

Part- B

Five short notes – Four questions to be answered (Questions shall be picked up from the whole syllabus preferably one question from each unit) $4 \times 6 = 24$ Marks

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Part -C

Five long answer Questions-Three questions to be answered.(Questions shall be picked up from the whole syllabus preferably one question from each unit) 3X12 = 36 Marks

M. A. ENGLISH

Semester -1

CC -1: English poetry from Chaucer to Milton

CC- 2: Shakespearean Drama

CC - 3 :15th to 17th Century Drama

CC- 4: Late 17th and 18th Century Literature

AECC-1: Environmental sustainability (3 Credits)

& Swachchh Bharat Abhiyan Activities (2 Credits)

Semester 2

CC-5 : Film and Literature

CC-6: 19th Century Poetry

CC -7 : Classical & English Criticism

CC-8: Indian and Western Literary Theory

CC-9: : 19th Century fiction and non-fiction

ACE 1 :

Semester 3

CC -10: Modern and Contemporary Poetry

CC - 11: Modern and Contemporary Drama

CC-12: Modern and Contemporary Fiction

CC -13: Indian Literature in English & in Translation

CC-14 Linguistics

AECC 2: Human Values & Professional Ethics (3 Credits)

& Gender Sensitization (2Credits)

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T.V.19

Srinivas
01.04.19

P. Srinivas
T.V.19

Semester 4**Elective Course (EC)1**

- (a) New Literatures
 (b) American Literature
 (c) Women's Literature
 (d) 16th and 17th Century Prose
 (e) Cultural Studies

Elective Course (EC)2

- (a) Translation Theory and Practice
 (b) Partition narratives
 (c) Writing in English from Bihar
 (d) European Fiction in English Translation

DSE - 1

Or

GE-1

DETAILED COURSE OF STUDY**M.A. Semester 1(Odd Semester)****CC - 1: English Poetry from Chaucer to Milton (70 Marks) 5 credits**

The students are required to attempt:

Q.1 (Compulsory) Ten Multiple Choice Questions from each unit 10X1 = 10 Marks

Q.2 (Compulsory) Any four short-answer questions with reference to the context requiring critical analysis

4X6=24Marks

Q.3: Any three Long-answer questions

3X12=36 Marks

Unit I : Chaucer: The Canterbury Tales: The General Prologue, The Wife of**Unit II: Spenser: The Faerie Queene, Book I**

Both

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Unit III: Shakespearean Sonnets: From fairest creatures we desire increase,
 Devouring Time blunt thou the Lion's paws; What is your substance, whereof are you made;
 Not Marble, nor the gilded monuments; In the old age black was not counted fair; My
 mistress' Eyes are nothing like the sun; Two loves I have, of comfort and despair;

Unit IV: Metaphysical Poetry:

John Donne: The Good Morrow, The Canonization, the Flea, Hymn to God my
 Father, The Anniversary, Valediction Forbidding

Mourning

Herbert : Redemption, Jordan, The Collar, Love

Marvell : To His Coy Mistress, Definition of Love

Unit V: Milton: Paradise Lost, Book- 1

Course Outcome: This course provides a panoramic structure of English poetry from Chaucer to Milton. It will enable the understanding and interpretation of poetic production in relation to its historicity, culture and inheritance drawn from classical Greek antiquity and diverse continental influences in relation to thematic patterns and forms.

CC-2 : Shakespearean Drama (70 Marks) 5 credits

The students are required to attempt :

- Q.1 (Compulsory) Ten Multiple Choice Questions **10X1=10Marks**
 Q.2 (Compulsory) Any four short-answer questions with reference to the context
 requiring critical analysis **4X6=24 Marks**
 Q.3 Any three Long-answer questions. **3X12=36Marks**

Unit I: Hamlet

Unit II: King Lear

Unit III: The Tempest

Unit IV: Twelfth Night

Unit V : Henry IV, Part I

Course Outcome : This course will enable the learners to gain knowledge of different dramatic forms used by Shakespeare. It will also enable students to revisit, Shakespearean drama as a cultural production with relation to contemporary society and culture.

CC-3: 15th to 17th Century Drama (70 Marks) 5 credits

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The students are required to attempt:

- Q.1 (Compulsory) Ten Multiple Questions 10X1=10Marks
 Q.2 (Compulsory) Any four short answer questions with reference to the context requiring critical analysis: 4X6=24Marks
 Q.3: Any three Long-answer questions 3X12=36 Marks

Unit I: Thomas Kyd: The Spanish Tragedy

Unit II: Marlowe: Dr. Faustus

Unit III: Ben Jonson: Volpone

Unit IV: Webster: The Duchess of Malfi

Unit V: Aphra Behn: The Rover

Course Outcome: This course offers a spectrum of different kinds of drama beginning with a Morality play and concluding with a woman dramatist who wrote Comedy of Manners.

CC-4: Late 17th and 18th Century Literature (70Marks) 5 credits

The students are required to attempt:

- Q.1 (Compulsory) Ten Multiple Choice Questions 10X 1=10 Marks
 Q.2 (Compulsory) Any four short answer questions with reference to the context requiring critical analysis: 4X6=24Marks
 Q.3: Any three Long-answer questions 3X12=36 Marks

Unit I: Pope: An Epistle to Dr. Arbuthnot

Unit II: Swift: Gulliver's Travels

Unit III: Gray: An Elegy Written in a Country Churchyard

Unit IV: Fielding: Tom Jones

Unit V: Blake: Songs of Innocence and Experience

Course Outcome: This variety of selection of poetry, prose and novel is located within the enlightenment project with its rationalizing processes impacting prosodic forms in poetry and anticipating a movement towards Romanticism. It will familiarize the students with the rising culture of the bourgeoisie.

Ability Enhancement Compulsory Course (AECC) I:

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Shreyas
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Environmental Sustainability (3) Credits
& Swachhha Bharat Abhiyan Activities (2 Credits)

Semester 2 (Even Semester)

CC- 5: Film and Literature. (70Marks) 5 Credits

The students are required to attempt :

- Q.1 (Compulsory) Ten Multiple Choice Questions 10X1=10Marks
 Q.2 (Compulsory) Any four short answer questions with reference to the context requiring critical analysis: 4x6=24 Marks
 Q.3 Any three Long-answer questions 3X12=36Marks

Unit 1(a): Key terms.

Unit 1b: Novel: Rabindranath Tagore, **Home and The World**, 1916

Film: Satyajit Ray: **Ghare Baire**, 1984

Unit 2: Novel: Khushwant Singh, **Train To Pakistan**, 1956

Film: Pamela Rooks: **Train To Pakistan**, 1998

Unit 3 Novel: E. M. Forster: **A Passage to India**, 1924

Film: David Lean, **A Passage to India**, 1984

Unit :4: Novel: Herman Hesse, **Siddhartha**, (1951)

Film :Conrad Rooks, **Siddhartha**, 1972

Unit 5: Novel: Harper Lee **To Kill a Mockingbird**, 1962

Film :Robert Patrick: **To Kill a Mockingbird**, 1962

Course Outcome: The course on film and Literature is to enable the understanding of the two most important cultural productions of our times. The course will examine films and texts as reflection and production of culture, ideology and history. It will encourage analytical skills related to visual literacy and its correspondences with the world framed as a structured text, familiarizing students with the techniques and grammar of films.

CC-6:19th Century Poetry (70 Marks)

Students are required to attempt:

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Q.1 (Compulsory) Ten Multiple Choice Questions	10X1=10Marks
Q.2:(Compulsory) Any four short answer questions with reference to the context requiring critical analysis	4X6=24Marks
Q.3 Any Three Long-answer questions	3X12=36 Marks

Unit I: Wordsworth : The Prelude Book I

Unit II: Coleridge: Dejection: An Ode; Keats: Ode to Ananias, Ode on A Grecian Urn

Unit III: Byron: Don Juan Book-I and II

Unit IV: (a) Browning: Rabbi Ben Ezra, Porphyria's Lover., Love Among the Ruins, A Grammarian's Funeral

(b) Tennyson: In Memoriam

Unit V: Hopkins: God's Grandeur, The Windhover, Fied Beauty, The Starlit Night

Course Outcome: The close of the eighteenth century saw a wide-moving and restless spirit of change and new creation in Europe. The French revolution was the most flamboyant manifestation of this spirit. The nineteenth century movement championed not only political liberty but also freedom from conventions, social and institutional restrictions. This course will make the students familiar with asthmatic responses to the quest of freedom, as aesthetic forms liberated themselves from the rigid orthodoxies of eighteenth century forms of poetry and their expression.

CC-7: Indian and British Criticism (70Marks) 5 Credits

Students are required to attempt:

Q.1 (Compulsory) Ten Multiple Choice Questions	10X1=10Marks
Q.2 (Compulsory) Any four short- notes (150-200 each words)	4X6=24Marks
Q.3 Any three Long-answer questions (350-400 words each)	3X12=36Marks

Unit I : Indian Criticism

- Introduction and Key Concepts : Rasa, Dhvani Alankar,Vakrokti
Arthaprakriti,Pratimukha, Sphota
- Bharatmuni: On Natya and Rasa: Aesthetics of Dramatic Experience
- Anandvardhan:The Structure of Poetic Meaning
- Kantaka: Language of Poetry and Metaphor
- Amir Khusro : Multilingual Culture

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Unit II: Aristotle: Poetics, Longinus: Peri Hypsos (On the Sublime)

Unit III: John Dryden: An Essay of Dramatic Poesy, Dr. Johnson: Lives of the Poets (Milton, Cowley and Pope) Coleridge: Biographia Literaria Ch- 11,34,17,18

Unit IV: Lawrence: Why the Novel Matters, T. S. Eliot: Metaphysical Poetry, Hamlet and his problems

Unit V: Practical Criticism (One passage either from poetry or from prose: Long answer question)

Course Outcome: Indian Literary Theory will engage students in understanding the intricacies of the craft of aesthetic production affecting a decolonized recovery of the importance of Indian aesthetic traditions. This course will provide insight into the historical development of criticism from Aristotle to the advent of theory in the twentieth century.

CC-8: Modern and Contemporary Critical theory (70Marks) 5 credits

Students are required to attempt:

Q.1 (Compulsory) Ten Multiple Choice Questions 10X1 = 10 marks

Q.2 (Compulsory) Any four short-notes 4X6=24 Marks

Q.3: Any three Long-answer questions from all the prescribed texts 3X12=36Marks

Unit I : From Liberal Humanism to Theory.

a) Formalism

i. Introduction to Formalism. Key terms:

Three Phases: Machine, Organic, System, Fabula, Suzhet, Defamiliarisation (ostranenie),

ii. Roman Jakobson :Two Aspects of Language

iii Victor Shklovsky :Art as Technique

iv .Boris Tomashevsky: Thematics

b) Structuralism

Introduction to structuralism: Key Terms : Signs, Signifier, Signified, Langue, Parole,

Mythemes, Binaries,

b) Saussure :Course in General Linguistics

c) Narratology : i) Introduction, Key Terms: Subject, Predicate, Functions, Desire, Communication, Auxiliary Support, Historic Recit, Narration, Mimesis, Diegesis (Heterodiegetic, Homodiegetic, Autodiegetic,) Focalization, Analepsis Prolepsis

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ii) Vladimir Propp: Morphology of Folk Tales

iii) Gerard Genette: Narrative Discourse (Excerpts from Rivkin and Ryan)

Unit II: Psychoanalysis, Feminism, Eco-Criticism

a) Psychoanalysis

- i.) Freud: Beyond the Pleasure Principle (Excerpt)
- ii.) Lacan: Insistence of the Letter in the Unconscious

b.) Feminism

- i. Virginia Woolf: Introduction to A Room of One's Own
- ii. Spivak: Three Women's Text and a Critique of Imperialism

b) Ecocriticism and Green Studies

- i. Cheryl Glotfelty: Introduction to Ecocriticism Reader
- ii. Patsy Hallen: Making Peace with Nature: Why Ecology needs Feminism

Unit III: Marxism, New Historicism, Cultural Materialism, Post colonialism,

i. Marxism

- a. Marx: From 'Capital' (From Rivkin and Ryan)
- b. Max Horkheimer and Adorno: The Culture Industry as Mass Deception

ii. New Historicism

- a. Nancy Armstrong: On the Politics of Domesticity
- b. Louis Montrose: Professing the Renaissance: The Poetics and Politics of Culture.

iii. Post colonialism

- a. Homi Bhabha: Signs Taken for wonders
- b. Ania Loomba: Situating Colonial and Postcolonial Studies

Unit IV: Post structuralism

i. Post structuralism

- a. Derrida: Structure, Sign and Play in the Discourse of Human Sciences
- ii. Discourse and Power
- a. Foucault: We "Other Victorians."

Unit V: Postmodernism

- a. Lyotard: The Postmodern Condition
- b. Baudrillard: Simulacra and Simulations
- c. Deleuze and Guattari: A Thousand Plateaus

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Course Outcome: Modern and Contemporary Critical theory is integral to how literary criticism is produced in the late 20th and 21st centuries and this form of critical literacy enhances a nuanced interpretation of literature's scope, content and form. This form of interdisciplinary critical literacy fosters different ways of thinking about and reading literature and culture. Students will find these exciting approaches immensely empowering in shaping thoughts on different ways in which literature may be read.

CC - 9: 19th Century Fiction and non-fiction (70 marks) 5 credits

Q.1 (Compulsory) Ten Multiple Choice Questions 10X1=10Marks

Q.2 (Compulsory) Any four short-answer questions with reference to the context requiring critical analysis 4X6=24Marks

Q.3 Any three Long-answer questions 3X12=36 Marks

Unit I: **Jane Austen**: Emma

Unit II: **George Eliot**: Mill on the Floss

Unit III: **Charlotte Bronte**: Jane Eyre

Unit IV: **Charles Dickens**: Hard Times

Unit V: **Matthew Arnold**: Culture and Anarchy

Course outcome: The study of Victorian literature should foster the understanding of the gradual establishment of democracy, the utilitarian attitude on account of striking material prosperity, the expansion of the British Empire, the effects of the aftermath of the industrial revolution, and the impact of Darwin's theory of Evolution that influenced the literature of the age.

Ability Enhancement Course (AEC)-I

M.A. Semester 3 (Odd Semester)

CC-10: Modern and Contemporary Poetry (70 Marks) 5 credits

Students are required to attempt:

Q.1 (Compulsory) Ten Multiple Choice Questions 10X1=10Marks

Q.2 (Compulsory) Any four short-answer questions with reference to the context requiring critical analysis 4X6=24Marks

Q.3 Any three Long answer questions 3X12=36 Marks

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Unit I : W.B. Yeats: Adam's Curse, A Coat, No Second Troy, A Prayer for my Daughter, Leda and the Swan, Byzantium, Easter 1916

Unit II : T. S. Elliot: The Wasteland

Unit III : (a)W. H. Auden : Muse Des Beaux Arts, In Memory of W.B. Yeats, Though the Night is Gone, (b)Stephen Spender: A Childhood, The Shapes of Death

Unit IV: Ted Hughes: The Thought Fox, Hawk Roosting

Sylvia Plath : Mirror, Lady Lazarus, ~~Lady Lazzarus~~, Daddy, Metaphor

Philip Larkin : The Whitsun Weddings, Next Please

Unit V : Seamus Heaney : Digging; The Forge ; Punishment ; The Skunk ;A Dream of Jealousy, Traditions, Punishment, The Railway Children, from the Frontier of Writing

Course outcome: The striking features of Modernism in literature are a spirit of disillusionment, reflections on the complexities of modern urban life, importance of the unconscious mind, recognition of impossibility of an absolute interpretation of reality and a feeling of ideological uncertainty. This course will help the students understand the intricacies of the aesthetic production of the age.

CC-11: Modern and Contemporary Drama (70Marks) 5 Credits

Students are required to attempt

- Q.1 (Compulsory) Ten Multiple Choice Questions **10X1=10Marks**
- Q.2 (Compulsory) Any four short-answer questions with reference to the context requiring critical analysis **4X6=24 Marks**
- Q.3 Any three Long-answer questions from all the prescribed texts **3X12=36Marks**

Unit I : S. Beckett: Waiting for Godot

Unit II : J. Osborne : Look Back in Anger

Unit III : Eugene O' Neill: Mourning Becomes Electra

Unit IV : Tom Stoppard : Rosencrantz and Guildenstern are Dead

Unit V : Edward Albee: Who is afraid of Virginia Woolf

Course outcome: Modern drama is born out of responses to a changing world order, family structures, existential crisis and absurdity of life and totalitarian regimes and surveillance. Students will appreciate the social, historical, cultural and political matrix that was expressed in innovative forms using multiple dramatic techniques.

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CC-12: Modern and Contemporary Fiction (70Marks) 5 Credits

Students are required to attempt :

Q.1 (Compulsory) Ten Multiple Choice Questions 10X1=10 Marks

Q.2 (Compulsory) Any four short-answer questions with reference to the context requiring critical analysis 4X6=24 Marks

Q.3 Any three Long-answer questions from all the prescribed texts 3X12=36 Marks

Unit I : Conrad : Heart of Darkness

Unit II : J. Joyce : A Portrait of the Artist as a Young Man.

Unit III : Chinua Achebe : Things Fall Apart

Unit IV : Salman Rushdie : Midnight's Children

Unit V : J. M .Coetzee : Disagree

Course outcome : This course will make the students understand fiction from different parts of the world covering multiple themes, styles, ideological persuasions and experiences.**CC-13: Indian Literature in English & in Translation (70Marks) 5 Credits**

Students are required to attempt :

Q.1 (Compulsory) Ten Multiple Choice Questions 10X1 = Marks

Q.2 (Compulsory) Any four short answer questions with reference to the context requiring critical analysis 4X6=24 Marks

Q.3 Any three Long-answer questions 3X12=36 Marks

Unit I: Rabindra Nath Tagore : Gora

Unit II : Amitav Ghosh :The Shadow Lines

Unit III : Bama :Sangai

Unit IV (Girish Karnad :Tughlaq)

Unit V :Henry Derazic: Poetry; Toru Dutt: The Lotus; Rabindranath Tagore:

Breezy April; Anurbhinda :Cosmic Consciousness; Sarojini Naidu: Village Song; Nissim

Ezekiel: Philosophy; Lover; A. K .Ramanujan: Another View of Grace; Shiv K. Kumar:

A Mango Vender; R. Parthasarthy: Home Coming Kolatkar : Woman; The Bus; De Souza:

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Sweet Sixteen; De Souza Prabhu; Meeting Poets; Agha Shahid Ali : Post Card from Kashmir; The Season of the Plains; Cracked Portraits.

Course outcome: Decentering English literature from metropolitan Britain and the creation of visibility of Postcolonial literatures from India that is inclusive of identities of multiple constituencies is a significant national project. Students will be able to appreciate different genres of writing with which cultural affiliations are likely to be immediate.

CC- 14: Linguistics (70Marks) 5 Credits

Students are required to attempt :

Q.1 (Compulsory) Ten Multiple Choice questions	10X1 =10Marks
Q.2 (Compulsory) Any four short answer -questions	4X6=24 Marks
Q.3 Any three Long-answer questions	3X12=36 Marks

Unit I : Descriptive Linguistics

- Phonetics and Phonology of English Language-Description of English Vowels and Consonants; Phoneme and Allophone; Syllabic Structure of English words; Stress and Intonation
- Morphology of English – Morpheme and Allomorph; Word Formation; Morphophonemics
- Syntax - I C Analysis; Phrase Structure Grammar; Transformational Generative Grammar
- Semantics – Lexical and Grammatical meaning; Phrase and Sentence meaning; Utterance meaning

Unit II : Historical Linguistics

The origin of English Language; Major Language families; The concept of Synthetic and Analytic Language; Scandinavian Influences; Latin and French Borrowings; Grimm's Law; Verner's Law

Unit III : Socio-Linguistics

Varieties of Language; Dialect; Register; Standard Language; Varieties of English: British, American and Indian; Multilingualism; Bilingualism, Code-switching; Code-mixing; Diglossia; Linguistic relativity and linguistic determinism (Sapir - Whorf hypothesis)

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Unit IV: Linguistics and Language Teaching

Teaching English as Second Language; Methods and Techniques of Language teaching; Teaching Aids; Teaching pronunciation, vocabulary and syntax of English; Contrastive Analysis; Error Analysis, Testing

Unit V: Linguistics and Literature

Style, Russian Formalism, Prague School, Stylistics, Literary Competence

Course Outcome: Study of Linguistics will enable the understanding of the structural and generative aspects of language, and social, cultural, historical and political factors through which linguistic and language based context is often determined.

Ability Enhancement Compulsory Course (AEEC) 2:**Human Values & professional Ethics (3 Credits)****& Gender Sensitization (2 Credits)****Semester 4 (Even Semester)****Elective Course (EC) 1****a) New Literatures (70 Marks) 5 Credits**

Students are required to attempt:

Q.1 (Compulsory) Ten Multiple Choice Questions	10X1= 10 Marks
Q.2 (Compulsory) Any four short answer questions with reference to the context requiring critical analysis	4X6=24 Marks
Q.3 Any three Long-answer questions from all the prescribed	3X12=36 Marks

Unit I : Maria Campbell : Halfbreed

Unit II : David Malouf : An Imaginary Life

Unit III : Hansda Sowvendra Shekhar : The Mysterious Illness of Rupi Bhaskey

Unit IV : Micere Githae-Mugo & Ngugi wa Thiong'o : The Trial of Dedan Kimathi

Unit V : A Selection of Poems: Margaret Atwood : The Moment, Is/Not; Pablo Neruda:

A Dog Has Died, Nothing But Death, Keeping Quiet, Derek Walcott: A Far Cry from Africa, Love After Love; Langston Hughes: Let America be America Again, Democracy, The Negro Mother; Maya Angelou : Phenomenal Woman, Still I Rise

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Course outcome- Drawn from different geographical locations, cultures and people's aspirations, these writings encourage students to appreciate diversities across borders. These insights will foster understanding and empathy for people in an act of mediated experience of history, culture and politics.

b) American Literature (70 Marks) 5 Credits

Students are required to attempt:

Q.1 (Compulsory) Ten Multiple choice questions 10X1=10 Marks

Q.2 (Compulsory) Any four short answer questions with reference to the context requiring critical analysis 4X6=24 Marks

Q.3 Any three Long-answer questions 3X12=36 Marks

Unit I : Mark twain: Huckleberry Finn

Unit II: Walt Whitman : Song of Myself 1-10

Unit III: Robert Frost – Selected Poems: Design; The Road not Taken; Stopping by Woods On a Snowy Evening; Meeting & Passing; The Gift Outright;

Unit IV: Tennessee Williams: A Streetcar Named Desire

Unit V: Alice Walker : The Color Purple

Course outcome: In the American Scholar address, Emerson said 'For far too long have we listened to the courtly muses of Europe' ushering in a distinctive character of American writing across genres. This course offers a broad sample of American writings covering different forms of aesthetic expressions.

c) Women's Literature (70 Marks) 5 Credits

Students are required to attempt :

Q.1 (Compulsory) Ten Multiple Choice question 10X1 =10 Marks

Q.2 (Compulsory) Any four short answer questions 4X6=24 Marks

Q.3 Any three Long-answer questions 3X12=36 Marks

Unit I : Virginia Woolf : A Room of One's Own

KR
Kamrishi
27/11/19

V. Woolf
T. J. J.
27/11/19

A. J. J.
27/11/19

AM
1/11/19

AD
01-06-19
1/1/19

Unit II : Margaret Atwood : The Handmaid's Tale

Unit III : Sylvia Plath : Selected Poems: Spinster; Daddy; The Moon and the Yew tree; The Arrival of the Bee Box; Edge; Childless Woman; Mary's Song; Mirror. **Maya Angelou:** Phenomenal Woman, Still I Rise, Caged Bird, Alone, Touched by an Angel

Unit IV : Mahasweta Devi: Mother of 1084 (translated by Samik Bandyopadhyay)

Unit V : Kiran Desai :The Inheritance of Loss

Course Outcome : Avoiding any claims to "universal women's experience", the content of the course includes a multicultural cross-section of women's experiences as women authors and members of diverse social groups. The objective is to analyze race, class, social identity, ethnicity, age and the intersections of these categories.

d) 16 th and 17th Century Prose (70 Marks) 5 Credits

The Students are required to attempt :

Q.1 (Compulsory) Ten Multiple Choice Questions 10x1=10 Marks

Q.2 (Compulsory) Any four short answer questions with reference to the context requiring critical analysis 4x6= 24 marks

Q.3 Any three Long-answer - questions 3x12= 36 marks

Unit I : The Bible: The Book of Job (Authorized Version)

Unit II : Bacon : Essays: Of Truth; The Unity in Religion ; Of Revenge; Of Love;

Of Superstition; Of Marriage and single life; Of Friendship; Of riches; Of Ambition;

Of Gardens; Of Studies; Of Honour and Reputation.

Unit III Machiavelli : from The Prince (Norton's ed) Machiavelli: From The Prince (Norton's ed) Ch.6 – New principalities acquired by one's own arms and prowess; Ch.7 – New principalities acquired by one's own arms and prowess; Ch.7 – New principalities acquired with the help of fortune and foreign aid; Ch.15- the things for which, men, and especially princes, are praised or blamed; Ch.16- Generosity and parsimony; Ch.17 Cruelty and compassion; Ch.18 How Princes should honour their word; Ch.21 How a prince must act to win honour; Ch.23 How flatters should be shunned; Ch.25 How far human affairs are governed by fortune and how fortune can be opposed.

Unit IV: Thomas Moore: from Utopia – Travel and Trade, Gold and Silver, Moral Philosophy, Delight in Learning, Slaves, Marriage Customs

K.R. Reddy
01.04.19

V. G. G. G.
01/04/19

Abhishek
01/04/19

01.04.19

Abhishek
11/4/19

Unit V: John Bunyan: The Pilgrim's Progress

Course Outcome: This course will encourage students to appreciate Wisdom literature, and in terms of style, as fountainhead of English prose covering satire, political philosophy, utopian imagination and spiritual awakening through prison literature.

e) Cultural Studies (70 Marks) 5 Credits

The Students are required to attempt :

Q.1 (Compulsory) Ten required to attempt	10X1=10Marks
Q.2 (Compulsory) Any four short answer questions	4X6=24 Marks
Q.3 Any three Long-answer questions	3X12=36Marks

Unit I: Introduction to Cultural Studies

Unit II: Stuart Hall- The Formation of cultural Studies, Encoding-Decoding: Dominant Hegemonic, Negotiated, Oppositional

Unit III: Culture Power and Inequality

Marxism, Ideology and Ideological State Apparatus, Hegemony, The Frankfurt School

Unit IV : Gender Age Race Ethnicity, Class Caste**Unit V : Power, Discourse and the Body**

Course Outcome: Cultural Studies is an interdisciplinary engagement with culture. It will develop among students the understanding of relationships between cultures as they intersect and interact in zones of contact. It will also make them aware of the power relations between the dominant and the disadvantaged, the manufacture of consent that ensures conformity. Stuart Hall states that Cultural Studies in Britain was born as a political project that analyzed post war advanced capitalist culture.

Elective Course EC 2

a) Translation Theory and Practice (70 Marks) 5 credits

The Students are required to attempt :

Q.1 (Compulsory) Ten MCQ	10X1=10Marks
Q.2 (Compulsory) Any four short answer questions	4X6=24 Marks
Q.3 Any three Long-answer questions from all the prescribed	3X12=36Marks

K.P. Ramesh
27/10/19

V. S. G. R.
1/11/19

Abhishek
11/09/19

11/9/19

1/10/19

Unit I: Translation: Definition; Areas; Types. Transcreation : Its relevance today

Translation as Science and Art ; Tool for translation

Unit II : Translation Theory; models of Catford and Nida ; the Craft of translation: translation methods

Unit III: Linguistics and Translation, Western and Indian Tradition. The Role of semantics and Grammar - morphology and syntax, technical terminology in English and Indian languages, culture and translation. Translation and socio-linguistics - varieties, and dialects and various registers - scientific texts, technological texts, legal texts, finance and Banking, Administration, Journalism.

Unit IV: Translation of literary texts. Problems, Implications & Significance - Poetry, Drama, Fiction, Criticism, Proverbs and Idioms. Stylistics and Translation; Machine Translation: Communication and Translation.

Unit V: The question paper will contain a brief text for translation into English from a choice of Passage in Hindi, Urdu or Bangla.

As Part of the CLA, a project work shall be undertaken that may include an article on translation theory, a write-up on the candidate's experience of undertaking the translation Project and the translation of a novel or three short stories or a substantial body of poems.

Course Outcome : This course will explore different approaches to translation and help develop an understanding of the links between theory and practice. It will enable students to acquire an awareness of the wider cultural, ethical and professional contexts of translation and equip them to later specialize as professional translators.

b) Partition Narratives

5 Credits

Students are required to attempt :

Q.1 (Compulsory) Ten MCQ	10X1=10Marks
Q.2 (Compulsory) Any four short-answer questions	4X6=24 Marks
Q.3 Any three Long-answer questions from all the prescribed:	3X12=36 Marks

Unit I: Urvashi Butalia -from The Other Side of Silence, Women

Unit II: Chaman Nahal: Aazadi

Unit III: Bhisham Sahni-The Train has Reached Amritsar

Saadat Hasan Manto- 'Toba Tek Singh'

Handwritten signature and date: 2/1/19

Handwritten signature: Vinita

Handwritten signature: W. P. Singh

Handwritten signatures and dates: 1/4/19, 01-04-19

Handwritten signature: K.R. Patel

Handwritten signature: J. K. Singh

Rajindra Singh Bedi- 'Lajwanti'

Unit IV: Prafulla Roy- 'Father'

Samaresh Basu- 'Farewell'

Gulzar- 'Raavi Paar'

Intizaar Hussain- excerpts from Basti (From Crossing Over eds. Frank Stuart & Sukrita P. Kr.

Unit V: Amrita Pritam -Punjab

Revised Course Content of (EC) 2 (C) Elective Course (EC)2 (C)

Writing in English from Bihar (70 Marks)

5 Credits

Students are required to attempt:

Q.1 (Compulsory) Ten MCQ

10X1=10Marks

Q.2 (Compulsory) Any four short-answer questions with reference to the context requiring critical analysis

4X6=24 Marks

Q.3 Any three Long-answer questions from all the prescribed:

3X12=36 Marks

Unit-I Non fiction

Sake Dean Mahomet : The Travels of Dean Mahomet, 1794

Unit II - Drama

Syed Mehdi Inam : The Drama of Prince Arjun

Unit III- Fiction

Amitava Kumar : Husband of a Fanatic

Talish Khair : How to fight Islamic Terror from a Missionary Position

Unit IV- Poetry

(b) Avadh Behari Lal : 1. An address to Ind
2. The White Man's Tombe under the
Gurudas Mukherjee : 1.Holybook; 2. Each Day

(c) Anandindra Kumar: 1. Poetic Myth; 2. Day and Night

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Handwritten notes: Kanchan 27/10, Kanchan 27/10, Kanchan 27/10

Ag. Shastriwar Sri Prasad-1. Cosmic Smile; 2. For My Daughter

Unit-V: - Criticism

- i) Kalimuddin Ahmad- Meaning of Criticism(1953)
- ii) Damodar Thakur: Spectrum: Intention and Idiom in Modern Poetry
- iii) Meenakshi Mukherjee : -The Perishable Empire

by Bank Baidya

Sanjay Kumar Paul (S. K. Paul): The Complete Poems of Rabindranath Tagore's
Aranyak: Text and Critical Evaluation



V. S. R. / 21/4/19

V. S. R. / 21/4/19

Aranyak / 21/4/19

Aranyak / 21/4/19

Aranyak

Aranyak / 21.04.19

Aranyak / 21.04.19

Aranyak / 21/4/19

Aranyak / 21/4/19

Aranyak / 01.04.19

Aranyak / 21/4/19

एच.ए. (हिन्दी) पाठ्यक्रम

प्रथम वर्ष

पत्रिका-संख्या २२२१३ २९

प्रत्येक प्रश्न पर 100 शब्दों का
होना सुझाए 70 शब्द परास
पठित व 30 शब्द आंशिक
पुनरांकन का होना।

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अन्यपत्रिका-संख्या पर

३११०-३०

श्रेणी :

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४१५-२९

१०१३-२०

भाषा व लिपि: उद्भव एवं विकास

70

भाषा : परिभाषा, सार/अंग, अभिव्यक्ति

✓ भाषा विज्ञान, परिभाषा एवं सार, प्रमुख अवयव पद्धतियाँ, अवयव की विभक्ति

शब्दोत्पत्ति के सिद्धांत, भाषा-परिवर्तन के कारण

शब्द परिवर्तन के कारण एवं विभक्ति

शब्द परिवर्तन के कारण एवं विभक्ति

लिपि का इतिहास, वेदमन्त्रों की लिपि की वैदिकता, मानकीकरण

हिन्दी भाषा की उद्भव की-संस्कृत अवस्था, अवस्था पुनर्गति

हिन्दी भाषा का विकास; अवस्था, स्वर एवं शब्दों के साहित्यिक भाषा के रूप में विकास

शब्दों के साहित्यिक रूपों का विकास : शब्दों, शब्दों और हिन्दी

शब्दों के साहित्यिक अर्थों और हिन्दी भाषा के स्वरूप का स्वर

हिन्दी का मानकीकरण

संस्कृत अर्थों और हिन्दी

संस्कृत भाषा की संरचना और हिन्दी

संस्कृत और हिन्दी की-संरचना

शब्दों की हिन्दी

अनुसंधित शब्द-

1. वेदमन्त्र सार - भाषा विज्ञान की दृष्टि, संस्कृत अवयव, लिपि

11 222

Examined and modified
Shah
14/11/15
Dr. ...
...

2. भोजपुरी विहारी- भाषा विज्ञान, विज्ञान भाषा, इलाहाबाद
3. बभ्रुवन सखीना- सामान्य भाषा विज्ञान हिन्दी साहित्य सम्बन्धन, प्रयाग
4. पदप्रत्ययविद्या विहारी- हिन्दी भाषा का वर्णन और विशाल, काली नगर, इलाहाबाद
5. सार्य भाषाविद्या विहारी- हिन्दी भाषा और लिपि का ऐतिहासिक विकास
6. अमल चौधरी (क०)- भाषा की लिपि : हिन्दी और ब्रह्मी, हिन्दी भाषा का अन्वेषण विदेशीय
7. सम्बन्धित कर्म- भाषा की कल्पना, सार्वजनिक प्रकाशन
 * * - भाषा और कला, सार्वजनिक प्रकाशन
8. भोजपुरी विहारी- हिन्दी भाषा
9. देवनागरी कर्म- सार्वजनिक हिन्दी : सार्वजनिक और सार्वजनिक
10. पदप्रत्यय कर्म - कृतनी हिन्दी, काली नगर, 1948
11. सार्वजनिक कर्म- हिन्दी साहित्य का इतिहास, काली नगर, 20 1956
12. विचारविद्यालय कालीना- हिन्दी सार्वजनिक, 20 1956, काली, 20 2032
13. भाषा विद्या - हिन्दी की विद्या में अन्वेषण का योगदान, लोकनाथी प्रकाशन इलाहाबाद, 1932
14. सुनीति कुमार चटर्जी- भारतीय भाषा भाषा और हिन्दी, सार्वजनिक, दिल्ली-1947
15. बीरल कर्म- बहिष्कारी का पद और पद, हिन्दी प्रकाश कर्म, इलाहाबाद, 1954
16. डॉ. विद्यालय विद्या- काली नगर अन्वेषण, 20 1956, काली, 20 2019
17. अन्वेषणविद्यालय काली नगर (विद्यालय सार्वजनिक) पदना 1960
18. सार्वजनिक सार्वजनिक- सार्वजनिक का प्रकाश (साहित्य विद्यालय)
19. सार्वजनिक विद्यालय में दिल्ली, पी.पी.एच. 1963- हिन्दी में पारिभाषिक कर्मों का निर्माण (विद्यालय अन्वेषण सार्वजनिक का पारिभाषिक निर्माण विद्यालय)
20. क्या कर्म में, प्रकाश, 1939 - डॉ. हिन्दी साहित्य पर एक दृष्टि (विद्यालय)
21. डॉ. कर्म- हिन्दी की भाषा, दिल्ली, कला प्रकाशन, 1947
22. अमल सार्वजनिक - ए सार्वजनिक विद्यालय (ओ.पी.सी.), 1961
23. विद्यालय अन्वेषण- ए सार्वजनिक, ए विद्यालय, डॉ. हिन्दी सार्वजनिक इन सार्वजनिक सार्वजनिक कर्मों का इतिहास, ओ.पी.सी. मुम्बई, 1964

22 अन्वेषण हिन्दी भाषा और सार्वजनिक - डॉ. अन्वेषणविद्यालय, इलाहाबाद, 1932

21/11/15
 S. S.
 11/11/15

22. बसुवा साहित्य - वेदान्तसङ्केतस्य श्रीस हिन्दु इतिहास भागोन्मु हरिवंशद एन्ध पाठ्यटीन्ध संकुी
कनारास ओ. यू. पी. दिल्ली, 1997
23. श्री इन्धाल अन्धध- दक्षिणी साहित्यस्य का आलोचनात्मक इतिहास, लोकभारती, इलाहाबाद, 1998
24. सङ्कुल साङ्कुसाधन- दक्षिणी हिन्दी काल्पाकार, विहार, सङ्कुभासा पीरुद, पटना, 1959
25. श्रीस आर. आर- श्रीसुव, मिनीसिपस एंड पीरिडिक्लस इन नार्थ इरिषा, कॅम्ब्रिज युनिवर्सिटी, डेरा,
1974
26. श्रीस नाला सङ्कुसल- सन्धकाली, साठसा प्रकाशन, दिल्ली, 2002
27. श्रीस अन्धध- कर्ना-काल, साठसा प्रकाशन, दिल्ली, 1998
28. लालीसागर कालीस- आधुनिक हिन्दी साहित्य (1855-1900) लोक नाली, इलाहाबाद, 1998
29. श्रीस श्रीस काली दक्षिणी हिन्दी का सङ्कुस्य और सिक्लस, हिन्दी साहित्य सन्धकाल, प्रकाश, 1994

19/5/18

10-5-18

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497 दस्तावेज-संख्या पत्र

3x10 = 30 (संशोधनकर्ता)

कॉस्ट : 45

4x5 = 20 (सहायक संशोधक)

10x2 = 20 (सहायक)

इतिहास दर्शन, साहित्येतिहासदर्शन व हिन्दी साहित्येतिहासलेखन की परंपरा

इतिहास का अर्थ इतिहास-पुस्तिका

इतिहास-पुस्तिका और साहित्येतिहास लेखन-प्रणाली

इतिहास-दर्शन और साहित्यिक इतिहास

साहित्येतिहास के प्रमुख विद्वांस : विवेकानंद, बालकृष्ण और बालकृष्ण

हिन्दी साहित्य के इतिहास लेखन की संरचना और साहित्यिक-इतिहास-पुस्तिका

काल-विभाजन का अर्थ

साहित्यिक प्रवृत्तियों का अर्थ

साहित्यिक परंपरा और साहित्यिक परंपरा व संदर्भ

इतिहास और आलोचना

हिन्दी साहित्येतिहास लेखन की परंपरा

X उत्तर-अनुसंधानकर्ता, नया इतिहासकार, साहित्येतिहास का साहित्यिक-परिचय

अनुसंधान संकाय-

1. ई. एच. कार - इतिहास क्या है?
2. फॉक्स-विशेषण कार्य- साहित्य का इतिहास दर्शन
3. टॉमस-विशेषण और विद्वान
4. रानडोल्फ-इतिहासदर्शन
5. जॉन. एच. ब्रुक्स-ए. आर. विद्वान और विद्वान
6. जॉन. एच. ब्रुक्स-साहित्यिक इतिहासलेखन
7. पी. एच. कार- बालकृष्ण और विद्वान एच. विद्वान
8. एच. एच. (वि.) - हिन्दी साहित्येतिहासलेखन की संरचना, हिन्दी साहित्य का संदर्भ-लेखन विवेकानंद, विद्वान

9. एक बटलरील्ल- द हिंदन इंटरनेटेशन ऑफ हिस्ट्री
10. बट्टेड रसेल- पोस्टुडस ऑफ हिस्ट्री
11. रेव्टन- हिस्टोरिकल एसेज एंड स्टाडीज
12. एननीबीएडि आर्ली- दि रीस ऑफ हिस्ट्री सेकुलर एंड रीजिड
13. रामचन्द्र कुल्ल - हिन्दी साहित्य का इतिहास
14. डॉ० जगन्ध (ए.)- हिन्दी साहित्य का इतिहास
15. डॉ० प्र० द्विवेदी- हिन्दी साहित्य की युक्ति
 - • - हिन्दी साहित्य का उद्भव और विकास
16. सुशील शर्मा- उत्तर अशुनिकता और उत्तर संरचनावाद
17. गोपीचंद नारल- संरचनावाद, उत्तर संरचनावाद और प्राथम आध्ययन
18. मेनेजर पांडे- साहित्य और इतिहास दृष्टि

10/5/18

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10/5/2018

10/5/2018

हिन्दी प्रोफेसर
 विभागाध्यक्ष, जे.ए.पी. विश्वविद्यालय
 गुवागटपुर

$$\begin{array}{r} 3 \times 10 = 30 \\ 4 \times 5 = 20 \\ 10 \times 2 = 20 \\ \hline 70 \end{array}$$

केंद्रिक : 5

हिन्दी साहित्य का इतिहास (प्रारंभ से ऐतिहासिक चक्र)

- ▲ हिन्दी साहित्य का प्रारंभ : कब और कैसे? पूर्वकी साहित्यिक परंपराएँ, अधिकांश-साहित्यिक-संस्कृत/संस्कृत, अधिकांश में प्रमुख कवि और उनका काल, प्रमुख साहित्यिक व्यक्तित्वें
- ▲ कवि अंदोलन के उदय की सामाजिक-सांस्कृतिक अवस्था-सांस्कृतिक-सांस्कृतिक पृष्ठभूमि, साहित्यिक अवस्था, कवि अंदोलन का अधिकांश भारतीय स्वतंत्र और एकता और साहित्यिक ऐतिहासिक, कवि अंदोलन और लोक जनमानस
- ▲ साहित्य-और-निर्गुण कवि का सामाजिक अवस्था, प्रमुख साहित्य-निर्गुण कवि और पूर्वकी रचनाओं में सामाजिक समस्य का चित्र, काल में कृषि का का उदय और विकास, हिन्दी में प्रमुख कृषि कवि और उनका काल, कृषि का के सामान्य विस्तार, *संस्कृत में सामान्य विस्तार*
- ▲ साहित्य और-निर्गुण कवि का सामान्य विस्तार, सामाजिक की सामान्य विस्तार, कृषि-काल की सामान्य विस्तार, कृषि-काल की सामान्य विस्तार, सामाजिक की सामान्य विस्तार
- ▲ ऐतिहासिक और ऐतिहासिक पृष्ठभूमि, ऐतिहासिक के मुक्त चक्र, परंपरा संस्कृति और ऐतिहासिक, ऐतिहासिक की विभिन्न सामाजिक- ऐतिहासिक, ऐतिहासिक और ऐतिहासिक, प्रमुख कवि और उनका काल, ऐतिहासिक की सामान्य विस्तार

अनुसंधान प्रश्न-

1. रामचंद्र गुप्त- हिन्दी साहित्य का इतिहास, नामकी प्रारंभिक काल, उत्तरी
2. हजारी प्रसाद द्विवेदी- हिन्दी साहित्य की भूमिका
3. हजारी प्रसाद द्विवेदी- हिन्दी साहित्य : उदय और विकास, राजमानस प्रकाशन, दिल्ली
4. हजारी प्रसाद द्विवेदी- हिन्दी साहित्य का ऐतिहासिक, विश्व साहित्यिक परिचय, पटना
5. विश्वनाथ प्रसाद मिश्र- हिन्दी साहित्य का इतिहास (काल- पूर्व), काली विश्वनाथ, प्रकाशन, काशी।
6. श्री नरेश (शं.) हिन्दी साहित्य का इतिहास, गेहलाल अधिकांश हजारी, दिल्ली
7. रामचंद्र गुप्त- हिन्दी साहित्य और साहित्य का विकास, लोकप्रसादी, इलाहाबाद।
8. कवि अंदोलन काल- साहित्य का इतिहास-प्रारंभ, विश्व साहित्यिक परिचय, पटना
9. काल मिश्र- हिन्दी साहित्य का प्रारंभ इतिहास, साहित्यिक प्रकाशन, दिल्ली
10. नरेश नरेश- साहित्य और इतिहास कृषि, काली प्रकाशन दिल्ली।

11. अखिल भारत- हिन्दी साहित्य के इतिहास की व्याख्या, साहित्य कर्मी, इलाहाबाद
12. डॉ. एल्लेयान कुरेन- नई साहित्य का इतिहास, अनुमन सारणी-२-३, नई दिल्ली, नई दिल्ली।
13. साहित्य अनुसंधान- हिन्दी साहित्य का इतिहास इतिहास
14. डॉ. विष्णुधर मिश्र, डॉ. विजयप्रसाद मिश्र- साहित्यिक विचार
15. डॉ. रामचन्द्र शुक्ल- अतिवादीय हिन्दी साहित्य
16. डॉ. जयदेव मिश्र तथा डॉ. रामदेव मिश्र- कवी-कवयः : लक्ष्मी
17. डॉ. जयदेव मिश्र तथा डॉ. रामदेव मिश्र- कवी-कवयः : कवय
18. डॉ. जयदेव मिश्र तथा डॉ. रामदेव मिश्र- कवी-कवयः : कवी
19. डॉ. रामचन्द्र शुक्ल- पौराणिक काल का साहित्य के इतिहास में
20. डॉ. रामचन्द्र शुक्ल- हिन्दी काल का साहित्य : समाजवादीय अध्ययन
21. अखिल भारत- कवयः काल का साहित्य
22. डॉ. रामचन्द्र शुक्ल- बौद्ध साहित्य का साहित्य और साहित्य
23. डॉ. विजयप्रसाद मिश्र- साहित्यिक विचार-काल का साहित्यिक अध्ययन
24. मिश्र कृष्ण मिश्र- साहित्यिक और साहित्यिक
25. डॉ. रामचन्द्र शुक्ल- भारतीय साहित्य का साहित्य
26. इतिहास- साहित्यिक की साहित्य
27. विजयप्रसाद मिश्र- हिन्दी साहित्य का साहित्य इतिहास

17/8/18

17/8/18

17/8/18

17/8/2018

17/8/2018

साहित्यिक विचार-काल का साहित्यिक अध्ययन
 डॉ. रामचन्द्र शुक्ल

MEN 101 CC-4

५४ वीया अंश पत्र

क्र.दि : 5

Handwritten notes and dates: 18/5/16, 20, 10/5/16, 10/5/16, 10/5/16

भारतीय हिन्दी कविता

बंदरगाह- कृष्णदास शर्मा, को २० का दिनेश्वरी एवं भास्कर सिंह

अनुसंधान- बंसेन शर्मा, को २००० दिनेश्वरी एवं विष्णुनाथ शिखरी

X. छाया- अक्षय, को- वासुदेवदास- अक्षय (कालपी- मुक्त- संत, कालपी- विष्णु- संत, पुराणाली- कालपी- संत)

विद्यापी- विद्यापी की पद्याली, को रामकृष्ण केरीपुरी, लोकभारती प्रकाशन, इलाहाबाद

सुविचार, को वीरचन्द्रनाथ चौधरी

अभि- अक्षय : १९९० पत्र

अनुसंधान मुद्रण- मुंबई

1. कृष्णदास शर्मा, को हजारों अक्षर दिनेश्वरी
2. हिन्दी कविता का अदिकाल, कालपी अक्षर दिनेश्वरी
3. कृष्णदास शर्मा की भाषा, भास्कर सिंह
4. कृष्णदास शर्मा, को भाषा अक्षर मुक्त
5. विद्यापी, विष्णु अक्षर सिंह, लोकभारती, इलाहाबाद
6. कविचित्त और विद्यापी का युग, अक्षय अक्षर, विष्णु अक्षर, कालपी
7. ज्ञानपीठ पुरस्कार, मुद्रण, को रामकृष्ण मुद्रण
8. ज्ञानपीठ, विष्णुदेवदास कालपी, हिन्दुस्तानी एकेडमी, इलाहाबाद
9. बंदरगाह, संत सिंह, कविता अक्षर, दिल्ली
10. अक्षर, को भास्कराक्षर मुक्त
11. हिन्दी अक्षर में विष्णु अक्षर, विद्यापी अक्षर
12. *Mithila in age of Vidyapati*, Radha Krishna Chaudhary Varanasi, 1978
13. अनुसंधान अक्षर, विद्यापी अक्षर
14. हिन्दी अक्षर की विष्णुभाषा में अक्षर, रामकृष्ण मुद्रण, कालपी विष्णु विष्णुदेवदास, कालपी
15. कृष्णदास : भाषा और कविता, रामकृष्ण विद्यापी, अक्षर, कालपी

Handwritten signatures and dates: 18/5/16, 10/5/16, 10/5/16, 10/5/16

20/12/20

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संस्कृत-अक्षर पत्र

दिनांक : 05

द्वितीय पत्र

3x10 = 30 (संस्कृत)

4x5 = 20 (संस्कृत)

1x2 = 20 (संस्कृत)

70

30

हिन्दी साहित्य का इतिहास : आधुनिक काल (भारत-भू युग से अन्तर्गत काल)

- सप्त अक्षर की शब्दी और हिन्दी प्रदेश का नवजागरण, सांस्कृतिक-युवाजीवन-न-आन्दोलन का संकेत, भारत-भू इतिहास और जनता संगठन, *आर्य समाज-भू*
- भारत-भू युग हिन्दी गद्य, कव्ची कवी हिन्दी गद्य का विकास, कवि विविधता कविता और ईश्वर इतिहास की कथा गीत, कवी कवि ने हिन्दी की प्रमुख गद्य-कविता, भारत-भूयुगीन साहित्य की प्रमुख विशेषताएँ
- महाकाव्य प्रकाश हिन्दी और जनता युग, कालगीत और हिन्दी नवजागरण, वैयक्तिकता युग और राष्ट्रीय आन्दोलन
हिन्दी में आधुनिक गद्य *युग* की उत्पत्ति विकास: जन-आन्दोलन आन्दोलन, विद्रोह, गद्य, जन-गद्य, कथानी, आत्मकथा, जीवनी, यात्रा-वृत्त, संस्मरण आदि।
- राष्ट्रीय स्वाधीनता आन्दोलन और हिन्दी का जनता संगठन- हिन्दी में नवजागरणारी प्रवृत्ति का उत्पन्न, विकास और प्रकाश
- प्राविश्वीय आन्दोलन और हिन्दी साहित्य, प्राविश्वीय साहित्य की विशेषताएँ
- स्वातंत्र्योत्तर हिन्दी साहित्य, देश विचारण और साहित्य, कविता और नई कविता
- स्वातंत्र्योत्तर हिन्दी साहित्य में वैचारिक द्वै- *व्यक्ति-और-आन्दोलन*, अतिराजवाद, कालगीत, प्राविश्वीयतावाद, जनतावाद आदि
- आधुनिक चरन्धर और जनतावाद, नई कथानी आन्दोलन और उसके बाद की कथानी, गद्य और कथानी के क्षेत्र में नए प्रयोग, हिन्दी आन्दोलन का विकास
- पराजयवाद, कालगीत, स्वातंत्र्योत्तर-कविता
- जनताजीवन हिन्दी साहित्य- कथाजीवन-हिन्दी-कविता-कविता, कथानी, जनतावाद, गद्य आदि में नई नृत्तियों का उत्पन्न, साहित्यिक चरन्धरिता और नए चरन्धर आन्दोलन, हिन्दी साहित्य में कवी-जीवन, कविता-जीवन
- हिन्दी में प्राविश्वीय साहित्य का-कविता
- आधुनिक हिन्दी साहित्य का विकास में संस्थाओं की भूमिका *(नए साहित्यिक विचार)*

अनुसूचित सूची-

1. रामचन्द्र सुन्दर- हिन्दी साहित्य का इतिहास
2. इन्द्रा द्विवेदी- हिन्दी साहित्य : प्रथम और विकास
3. वि० आ० मिश्र- हिन्दी साहित्य का अतीत, दो भाग
4. मेनेका चाम्बर- कविता आन्दोलन और कृतियाँ, दिल्ली, 1994
5. रामचन्द्र वर्मा- बालदेवु हाजिबद और हिन्दी साहित्यगत की सामग्री, राजकमल प्रकाशन, दिल्ली, 1984
6. मेनेका चाम्बर- साहित्य और इतिहास दृष्टि, पेरुलु मिदरेरी, दिल्ली, 1987
7. मंदगुला काजवेदी- हिन्दी साहित्य : बीसवीं शताब्दी, लोकभारती, इलाहाबाद, 1983
8. विश्वनाथ त्रिपाठी- हिन्दी साहित्य का इतिहास इतिहास, एन.सी.इ. आर.टी. दिल्ली, 1988
9. रामचन्द्र चतुर्वेदी- हिन्दी साहित्य और संस्कृत का इतिहास, लोकभारती, इलाहाबाद, 1988
10. रामचन्द्र मिश्र- कविता के नये अंगीकरण, राजकमल प्रकाशन, दिल्ली, 1988
11. देवीशंकर अग्रवादी- विद्वानों के संघ, राजकमल प्रकाशन, दिल्ली, 1985
12. अक्षयकान्त चाम्बर- दक्षिण साहित्य का संदर्भसाधन, साक्षात्कृत प्रकाशन, दिल्ली, 2001
13. राजदेव चाम्बर/अक्षय चाम्बर, एड.- अतीत होती कविता और कवि का जीवन, राजकमल प्रकाशन, दिल्ली, 2001
14. महादेवी वर्मा- कृतियों की कविताएँ, भारतीय साहित्य इलाहाबाद, 1958
15. रामचन्द्र मिश्र- हिन्दी साहित्य का दूसरा इतिहास, साक्षात्कृत प्रकाशन, दिल्ली, 1996
16. श्रीराम मिश्र शर्मा, देवेन्द्र शर्मा, एड.- साहित्य की संस्था और दक्षिण साहित्य : भारतीय प्रकाशन, इलाहाबाद और स्वदेशी साहित्य, दिल्ली, 2001
17. S.C. Mallik (Ed.) - Indian Documents : Some Aspects of Dissent Protest and Reform, Shimla, 1978
18. Savitri Chandra- Social Life and Concepts in Medieval Hindi Bhakti Poetry, Meerut, 1983.
19. विद्वानों का संग्रह- हिन्दी साहित्य का इतिहास, साहित्य अकादमी, दिल्ली, 1988
20. देवेन्द्र शर्मा- आधुनिक साहित्य में दक्षिण दिशा, अतीत साहित्य, दिल्ली, 2008

21. दीपक कुमार, देवेन्द्र चौधरी - इतिहास का कृतज्ञः । एबी प्रिन्ट और डिजिटलसी क्लब का वैकल्पिक इतिहास, अखिल अकादम, पंचकुला, 2011
22. कुलन राजे- हिन्दी साहित्य का ^{संस्कृत} अर्थक इतिहास
23. लक्ष्मीशरण वर्मा- आधुनिक हिन्दी साहित्य का इतिहास
24. माधव सिंह- इतिहास और आलोचना
 - * - - - - - प्रस्ताव
 - * - - - - - आधुनिक हिन्दी साहित्य की प्रवृत्तियाँ
25. रामचन्द्र विद्याली- हिन्दी का गद्य साहित्य
 - * - - - - - आधुनिक हिन्दी साहित्य : विविध अध्ययन
26. रामचन्द्राय चतुर्वेदी- गद्य साहित्य : विकास और विधाता

10/5/2018

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 हिन्दी प्रचारक
 श्री-राम- लक्ष्मी शरण वर्मा
 पंचकुला

5. रामचन्द्र मुसल- मुरदास
6. रामचन्द्र मुसल- सोमनाथी मुसलीदार
7. विश्वनाथ विपारी- सोमनाथी मुसलीदार
8. बाला विपारी- मुर साहिल
9. हरमल लाल कर्मा- मुर और फनका साहिल
10. गंर दुगारे काजरेवी- महाशयि मुरदास, अजीमद
11. मेवेजर पांडेय- बसित आंदोलन और मुरदास का बाला, गढ़ दिल्ली
12. प्रेमकांत- रामकाय और मुसली
13. विश्वनाथ विपारी- गीत का बाला
14. विश्वनाथ ब्रह्मद मिश्र- विहारी, बगलपती
15. बख्त सिंह- विहारी का गण मुसलीदार
16. गोहर लाल गौड़- धनानंद और स्वयंसेवक कायदा
17. विश्वनाथ ब्रह्मद मिश्र- धनानंद अजिता, बगलपती
18. व्यंजितल कर्मा- मुंगारी रीतिमुसल बाला में प्रतियोगिता
19. इमरे कंडा- धनानंद

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विभागीय अध्यक्ष
मुसलीदार

17 JAN 2002 CC-7

संस्कृत
साहित्य-प्रश्न पत्र

केंद्रिक : 105-A

दिनांक 12-1-2002

संस्कृत-प्रश्नपत्र

1/1/2002

पत्र संख्या 105/2002

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संस्कृत साहित्य का इतिहास

सर्वे महाकाव्यों का परिचय

सर्वे महाकाव्यों का पूर्वार्णव काल

संस्कृत महाकाव्य

संस्कृत गीतिकाव्य

संस्कृत नाटक

संस्कृत पद्यकाव्य

सायक-पुस्तक- वैषयक (सुनिश्चित) 10 अंश

अनुसंधित संका-

1. संस्कृत साहित्य का इतिहास- डॉ. बलदेव सुन्दर, मेरठ विश्वविद्यालय, मेरठ, दिल्ली
2. संस्कृत साहित्य का इतिहास- सत्यनारायण त्रिपाठी, विश्वविद्यालय प्रकाशन, बलरगढी
3. संस्कृत कवियों का रचना-संसार- जयदेव त्रिपाठी, लोकभारती प्रकाशन, इलाहाबाद
4. संस्कृत सुखी कविका- बलदेव उपपाध्याय, चौखम्बा, बलरगढी
5. संस्कृत नाटककाल- कानि त्रिपाठी मलीक, हिन्दी कविता, जयपुर
6. वैषयक एक पुस्तकी कवानी- अशोक इरानी प्रकाश द्विवेदी, राजकमल प्रकाशन, दिल्ली

7. *Handwritten notes and signatures*

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अभ्युक्ति सूची-

1. M.Mellucci - New social movements : A Theoretical Approach
2. T.S. Euhn (Ed.)- The Kristeva Reader
3. Beverly Sleggs- Feminist Cultural theory process and production
4. Sylvia Walby- The Originating Patriarchy
5. Tony Rosemary- Feminist Thought : A Comprehensive introduction
6. Mary Wollstone craft- A vindication of the Rights of Women.
7. J.S. Mill- The Subjection of Women.
8. डॉ. वीरमा अम्बेडकर- अम्बेडकर चरम, चरम चरमर का प्रस्ताव
9. अम्बेडकर बुले- अम्बेडकर बुले चरम
10. अमर कृष्ण दुबे (सं)- अम्बेडकर के अर्थों में दलित
11. विवेक व चोपड़ा- दली अम्बेडकर (अनु) अम चोपड़ा
12. नरदेवी वर्मा- नृपति की अम्बेडकर
13. डॉ. अमर कृष्ण दुबे- दलित अम्बेडकर का दलितवाद, अली अम्बेडकर, नई दिल्ली
14. डॉ. अमर कृष्ण दुबे- दलित अम्बेडकर का दलितवाद
15. अमर कृष्ण दुबे- दलित अम्बेडकर की अम्बेडकर
16. अमर कृष्ण दुबे (सं)- दलित अम्बेडकर : अली और नृपति अम्बेडकर
17. अमर कृष्ण दुबे (सं)- दलित अम्बेडकर की अम्बेडकर और अम्बेडकर
18. अमर कृष्ण दुबे- दलित अम्बेडकर के अली

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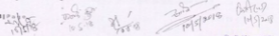
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दलित अम्बेडकर का दलितवाद
अम्बेडकर

- इन्द्रकाश पदार्थ- हिन्दी उपन्यास : पद्मनाभ और शक्ति
6. राजेश्वर पदार्थ- उपन्यास : लाला और लोहरना
 7. रामदास मिश्र- हिन्दी उपन्यास : एक अजीबारा
 8. परमहंस श्रीवास्तव- उपन्यास का प्रकार और रचनात्मक भाव
 9. श्रीमती सुखती- विचित्रता एक विपरीत : जीवन एक असाधारण रूप इतिहास
 10. दिन कुमार मिश्र- कथासंग्रह
 11. रामचन्द्रिका शर्मा- प्रेमचंद और उनका युग
 12. निराला शिवाजी- हिन्दी उपन्यास (1900 के बाद)
 13. श्रीवास्तव या 'शक्ति' - भारतीय स्वतंत्रता संग्राम और हिन्दी उपन्यास
 14. प्रेमचंद जीव- अर्जुन सहायकार
 15. प्रमोद जीव- प्रेमचंद पूर्व के हिन्दी उपन्यास
 16. श्रीवास्तव लाला (शक्ति) - व नीति एक इतिहास, संलग्न 1900
 17. राजेश्वर प्रसाद मिश्र- आधुनिकता की कला और कथा साहित्य
 18. नन्द दुलारे वाजपेयी- प्रेमचंद एक सांस्कृतिक विवेक
 19. 'मंदराज' साहित्यकार- प्रेमचंद के उपन्यास का भी लाला
 20. अशोक वाजपेयी - प्रेमचंद की आत्मा
 21. सुधाकर कुमारा- आधुनिकता, कथासंग्रह और रचना
 22. रविशंकर मिश्र - हिन्दी उपन्यास और प्रकृति
 23. कर्मवीर अग्रवाली- प्रेमचंद और आधुनिकता
 24. श्रीवास्तव लाला- अज्ञेय और उनके उपन्यास
 25. साधुकाश मिश्र (शक्ति) - श्रीवास्तव का लाला
 26. सुधीर - हिन्दी उपन्यास का विकास
 27. निराला मोहन सिंह- कथा संग्रह
 28. नन्द विश्वेश्वर लाला (शक्ति)- कर्मवीर (शक्ति) का उपन्यास एक ही जगह पर : आत्मचरित्त की कृति
 29. सुधीर साधुकाश- सुधीर व साहित्यकारों की और नीति

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हिन्दी साहित्यकार
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दस्तावेज
उत्तर-प्रश्न पत्र

कैलिट : 05

समस्याओं - 3 x 10 = 30
समस्याएं - 4 x 05 = 20
समस्याएं - 10 x 2 = 20
70

आधुनिक हिन्दी काव्य

सही सही की कविता में आध्यात्मिकता

आधुनिकता और आध्यात्म काव्य

कविता और प्रथम काव्य

सामयिक और काव्य

1. सारंगी- वैदिकीकरण पूर्व- लोकभारती प्रकाशन, इलाहाबाद (आठवां हेतु केवल चरण करें)
2. कामायनी- जगदीश प्रसाद (आठवां हेतु केवल चरण करें)
3. राम किरण- विद्याल, लोकभारती प्रकाशन, इलाहाबाद (राम की कविता पूर्व, सरोज कृषी, लोकती काव्य, साठ अष्टम एकाई के प्रति)
4. साधना- नव लोकभारती प्रकाशन, इलाहाबाद (अनु/वि/2 में 4 कविताएं)
5. सवित्री- महारथी (आधुनिक कविता के 100 कविता)
6. उत्पत्ति- विद्याल (आठवां हेतु केवल चरण करें)
7. वसन्त- सरोज का निबंधन, निर्माण, पुन का वे, कोन भरी लोको काव्य/पुन का पुन
कालिदास कविताएं- राजकमल प्रकाशन, दिल्ली
8. मेराही- कविता, नई कविता, कवि, विद्याल कृषी, कविता काव्य कावे, वेत का है काव्य काव्य
कालिदास कविताएं- राजकमल प्रकाशन, दिल्ली
9. सुमित की कविताएं- का सरोज निबंध, विद्याल कृषी, लोकभारती प्रकाशन, इलाहाबाद ।
अध्यात्मिकता, आधु/का/काव्य, सरोज का, कविता, कविता।
10. आकाश सारंगी- नव कावे केवल चरण, कविता, काव्य कावे, कविता, काव्य (अष्टम वेत का काव्य)

अनुसंधान कविता- अष्टम प्रकाशन, पुन
(अनु/वि/2 में 4 कविताएं, अष्टम वेत का काव्य 2)
अधुनिक कविता- 2/4/20

1. आधुनिक हिन्दी कविता का इतिहास- डॉ. नन्दकिशोर तिवारी, भारतीय साहित्य, दिल्ली।
2. कामायनी सन्दर्भ- कविता विद्या, भारती कविता, इलाहाबाद
3. टिप्पणियां (आधुनिक कविता) - डॉ. श्री. श्री. राजल एवं डॉ. श्री. श्री. सुभाष - लोकभारती प्रकाशन (इलाहाबाद)

3. कलाकली चीरीकाल- सः नन्द किशोर नारा, अनुपम प्रकाशन, पटना।
4. कलाकली लोचन- डॉ० उदय शत्रु सिंह, राजकृष्ण प्रकाशन, दिल्ली।
5. लट्टकली वैदिकीकाल युग और काल- डॉ० पूर्ण प्रसाद वैदिक, विद्यालय वर प्रकाशन, दिल्ली।
6. वैदिकीकाल - डॉ० नन्द किशोर नारा, राजकृष्ण प्रकाशन, दिल्ली।
7. लयाकाल- डॉ० नाराय सिंह, राजकृष्ण प्रकाशन दिल्ली।
8. लयाकाल का काल- डॉ० देवशंकर, राजकृष्ण
9. निराल की साहित्य लयाकाल (दुसरा भाग) - डॉ० लक्ष्मीकांत शर्मा, राजकृष्ण प्रकाशन, दिल्ली।
10. निराल कृति के लयाकाल- नन्द किशोर नारा, राजकृष्ण प्रकाशन दिल्ली।
11. निराल : लयाकाल लयाकाल, कृष्ण सिंह, लोककलागी प्रकाशन, इलाहाबाद।
12. निराल की कविताएँ और काल लया - लया लया लोककलागी
13. काल निर्णय : निराल - डॉ० देवी लया, लयाकाल कविताएँ एक सिग्रेटिभूटन, दिल्ली।
14. अनुपम किशोर कविता- डॉ० विद्यालय प्रसाद कविता लोककलागी।
15. लयाकली लयाकली- लया प्रसाद लयाकली, लोककलागी
16. लयाकली- इन्द्रलया लया, राजकृष्ण प्रकाशन, दिल्ली।
17. लयाकाल प्रसाद- लयाकाल लया, साहित्य लयाकली
18. निराल- लयाकाल लयाकाल, साहित्य लयाकली
19. लयाकाल लया- लया लया लयाकाल, साहित्य लयाकली
20. वैदिकीकाल युग- लया लया, साहित्य लयाकली
21. निराल- लयाकाल लयाकाल सिंह, साहित्य लयाकली
22. निराल- लयाकली लया, राजकृष्ण
23. लयाकली लयाकली और लया, लयाकाल लयाकाल सिंह, लयाकाल प्रकाशन, इलाहाबाद
24. लयाकली लयाकली और लयाकाल- डॉ० डॉ० लयाकली लयाकाल लयाकाल लयाकाल लयाकाल, दिल्ली
25. निराल- लयाकलीकाल लया- लयाकलीकाल लया, राजकृष्ण प्रकाशन, दिल्ली
26. निराल की साहित्य लयाकाल- डॉ० लयाकली लया लया, लयाकाल प्रकाशन, मुजफ्फरपुर
26. लया लयाकली- नन्द किशोर नारा, राजकृष्ण प्रकाशन

19. निराल की कविताएँ और काल लया, डॉ० देवी लया, लयाकाल कविताएँ एक सिग्रेटिभूटन, दिल्ली।

29. अशोक- सं० विद्यानाथ प्रसाद विद्यार्थी, पंचमल परिवारिण हाउस, दिल्ली
30. मेघाली : विद्यान-अनुविद्या सं० ललीत कुमार राय, ललीत प्रसाद, मुजफ्फरपुर
31. वही- आचार्य जगदीश बल्लभ शर्मा, अविद्या प्रसाद, मुजफ्फरपुर
32. हरिवंश राय बघवा- टण्डन, साहित्य अकादेमी, दिल्ली
33. गोपाल सिंह मेघाली- ललीत कुमार राय, विद्यान परिवारिण, मुजफ्फरपुर

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श्रीमती मारुता देवी
विद्यान परिवारिण हाउस
मुजफ्फरपुर

- 12.1. पञ्जाबिया के सिक्किम एंड.सी. सिरोमंडीपुल एमए, जेजुल एंड.सी. ए.ए.ए.
12. भारतीय इलेक्ट्रॉनिक मीडिया- डॉ. देवदास सिंह, प्रकाश प्रकाशन, दिल्ली
13. वेब पत्रकारिता तथा मीडिया नये सवाल- सतिश जीनी, सिद्धाचार जीनी, राधाकुल प्रकाशन, दिल्ली।
14. न्यू मीडिया इन्टरनेट की भारतीय चुनौतियाँ और सम्भलनरी, डॉ. जयज जेजुल, राधाकुल प्रकाशन, दिल्ली।
15. मीडिया की छल- अरविन्द मोहन, सिद्धाचार, दिल्ली।
16. पेट्टा पत्रकार- हेमन्त, सार्वजनिक प्रकाशन, दिल्ली।
17. समाजवादी हिन्दी मीडिया- डॉ. विजय राम शीखर, सार्वजनिक प्रकाशन, दिल्ली।
18. पत्रकार प्रेमचन्द- डॉ. सतीश कुमार राय, सतीश प्रकाशन, मुजबबपुर
19. सार्वजनिक मीडिया सवाल- डॉ. देव, सार्वजनिक प्रकाशन दिल्ली।

20. *महाराष्ट्र के सिक्किम एंड.सी. सिरोमंडीपुल एमए, जेजुल एंड.सी. ए.ए.ए.*

$\frac{2000}{10/1/18}$ $\frac{2000}{10/5/18}$ $\frac{15}{10/5/18}$ $\frac{2000}{10/5/2018}$ $\frac{2000}{14/5/2018}$

(1) *महाराष्ट्र के सिक्किम एंड.सी. सिरोमंडीपुल एमए, जेजुल एंड.सी. ए.ए.ए.*
सिक्किम एंड.सी. सिरोमंडीपुल एमए, जेजुल एंड.सी. ए.ए.ए.

6. बांग्ला प्रान्तगत- विभिन्न- बकिंगबन्ध बटारी, रबीन्द्रबन्ध बाबु, ताराबन्ध, ताराबन्ध बन्धोबन्ध, विनास विर, बन्धो बन्ध विर, बन्धोबन्ध देवी, बकिंग बन्धोबन्ध

7. बांग्ला बन्धो बन्धो बन्धो बन्धो

अनुबन्धित बन्ध-

1. बांग्ला बन्धो बन्धो बन्धो- बन्धो बन्धो बन्धो, बन्धो बन्धो बन्धो, बन्धो
2. बांग्ला बन्धो बन्धो बन्धो- बन्धो बन्धो, बन्धो-बन्धो, बन्धो
3. रबीन्द्रबन्ध बाबु- विभिन्न बन्धो बन्धो, बन्धो अनुबन्ध- बन्धो, बन्धो बन्धो बन्धो, बन्धो।
4. बकिंग बन्धोबन्धो- बन्धो बन्धो बन्धो, अनु- बन्धो बन्धो बन्धो बन्धो बन्धो बन्धो, बन्धो।
5. बन्धोबन्धो बन्धो बन्धो- बन्धो बन्धो, अनु- बन्धो बन्धो बन्धो, बन्धो बन्धो बन्धो, बन्धो।
6. बकिंगबन्ध बटारी- बन्धो बन्धो बन्धो बन्धो, अनु- बन्धो बन्धो बन्धो बन्धो बन्धो, बन्धो
7. बन्धो बन्धो बन्धो बन्धो- बन्धो बन्धो, अनु- बन्धो बन्धो बन्धो बन्धो बन्धो, बन्धो

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बन्धो बन्धो बन्धो बन्धो

अनुसूचित सूची—

1. बेंदराण्य अग्रवाल : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
2. अरुण कमल : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
3. बेंदराण्य सिंह : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
4. मुक्तिशेखर : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
5. कि ७७ किराँती : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
6. रामदेव महापुर सिंह : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
7. सौंदर्य दयाल सक्सेना : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
8. विश्वेश्वर : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
9. आनंद की लोकगीत कवि अग्रवाल, राजकमल पुस्तक संघ, नई दिल्ली
10. रघुवीर शर्मा : प्रतिनिधि कविताएँ, राजकमल प्रकाशन, नई दिल्ली
11. मदन कवरण : कवि ने कहा, किताबघर प्रकाशन, नई दिल्ली
12. विक्रमदेव नारायण झाड़ी, सखी, सानी प्रकाशन, नई दिल्ली
13. रामकालीन हिन्दी कविता— विश्वनाथ प्रसाद त्रिपाठी, लोकभारती प्रकाशन, इलाहाबाद।
14. कविता का वर्तमान— सरोज कानुन, परिभाषा प्रकाशन, इलाहाबाद
15. रामकालीन काव्य—काव्य— मदन किराँती मठ, राजकमल प्रकाशन, दिल्ली।
16. मुक्तिशेखर झुन और सौंदर्य— मधु किराँती मठ, राजकमल प्रकाशन, दिल्ली।
17. हिन्दी के प्रगतिशील और रामकालीन कवि— डॉ० लक्ष्मी साहित्य संपादन, बनपुर।
18. कविता के नये प्रतिमान— डॉ० रामदेव सिंह, राजकमल प्रकाशन, दिल्ली।
19. कविता की जमीन और जमीन की कविता— डॉ० रामदेव सिंह, राजकमल प्रकाशन, दिल्ली।
20. नयी कविता और अतिवादावाद— राम किराँती मठ, राजकमल।
21. आधुनिक कवि— विश्वनाथ मठ, सार्वभौमिक मठ, लोकभारती प्रकाशन।
22. आधुनिकी कविता काव्य— रामकमल बहुवीर, लोकभारती प्रकाशन
23. कविता के तीन दरवाजे— अरुण किराँती, राजकमल
24. कविता का उलट जीवन : ¹⁹⁷⁷⁻⁷⁸ अन्वयान्वेषण और विचार, राजकमल

25. हिन्दी कविता अथी विलुप्त अथी, नन्दकिशोर नन्द, राजकमल
अथी लिटि.अथी
26. समकालीन हिन्दी कविता- ए अथीविन्दान, राजकमल प्रकाशन, दिल्ली।
27. अन्ताराज का वृद्ध विप्लव- ओरे रे, सं. निर्मल जेठ, राजकमल प्रकाशन, दिल्ली
28. नागार्जुन अंतरंग और सृजनकर्त- सं. मुल्ली मनोहर प्रसाद सिंह, धवल बीरान, लोकभारती प्रकाशन, इलाहाबाद
29. कवि चरमक की चक्रवर्त- हेमन्त कुमारी, भारतीय ज्ञानपीठ, दिल्ली।
30. महाकाव्य से मुक्ति- ओ. देवतीराम, अभिव्यक्ति प्रकाशन इलाहाबाद।
31. विरोधन- देवतीराम, साहित्य अकादेमी, दिल्ली।
32. सप्तशत महापुर सिंह- प्रकाश सोधि, साहित्य अकादेमी, दिल्ली।
33. सर्वरस दयाल सङ्कोच- कृष्णदास पासीवाल, अकादेमी, दिल्ली।
34. सुंदर सारथक एपीकथी- सं. पालीच मिश्र, पानी, प्रकाशन, दिल्ली

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दिल्ली

6. डॉ० मोहन- काव्यशास्त्र की बुनियाद
7. रामधुनी विद्यापीठ- भारतीय काव्यशास्त्र की नई विधि
8. भारतीय विश्व- काव्यशास्त्र
9. भोजपुरी भाषा- ज्ञानि संप्रदाय और उसके सिद्धांत
10. रामधुनी विद्यापीठ- भारतीय काव्य विचार
11. अखंड खण्डित का मुद्रा- काव्यशास्त्र
12. डॉ० मोहन- काव्यशास्त्र का इतिहास केवल परिकल्पित भाषा, नई विधि
13. सीमरन व कोराना- सी : परिकल्पित, अज्ञेय का कोराना, विन्ड सीमरन मुद्रा
14. जर्नल सीमर- सिद्धि की सी, अज्ञेय का सीमरन काव्यशास्त्र
15. Rene Wellek - History of Modern Criticism 1750-1950.
16. Jonathan Culler- Structuralist Poetics : Structuralism, Negotation and the studied literature.

- The Pursuit of Signs: Semiotics Iteration Deconstruction, Routledge ad Kegan

17. Terry Eagleton- Criticism and society in literary History
- The ideology of Aesthetics, Oxford University Press, London.

18. Edward Said- The word, the text and critic Harvard Uni. press.

19. Tejal Mai - Sexual textual politics: Feminist Literary theory.

20. रामधुनी मुद्रा - एक मोहन
- सिद्धि का-1 और 2

21. मोहन काव्य- काव्यशास्त्र, ज्ञानि काव्यशास्त्र एवं ज्ञान काव्यशास्त्र ज्ञानि काव्यशास्त्र, सिद्धि

22. Mary Beth Rose- Gender and Heroism in Early Modern literature, University of Chicago Press.

23. *Handwritten notes and scribbles*

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साहित्य का समाजशास्त्र और संस्कृतिभूतक अध्ययन

समाजशास्त्रीय दृष्टि से साहित्य के अध्ययन की संरचना : पाठ्यक्रम और भारतीय

प्रमुख साहित्यिक समाजशास्त्री : इंग्लिश अकादमी के, जियो जेम्स, लुडविग गोल्डमन और वेबर् विनियन

साहित्य के समाजशास्त्र की प्रमुख दृष्टियाँ- साहित्य में समाज की चोख, समाज में साहित्य और साहित्यकार की स्थिति, साहित्य और पाठक-समुदाय, लोकतांत्रिक साहित्य का समाजशास्त्र, साहित्य और समाजशास्त्र के अन्तर्गत

साहित्य के समाजशास्त्र की प्रमुख दृष्टियाँ- विवेकानंद, अणुभाषण, संस्कृतभाष्य और मारसल

साहित्य का संस्कृतिभूतक अध्ययन : भारतीय अकादमी, डॉ. और संस्कृति, जर्मी और संस्कृति

साहित्य के संस्कृतिभूतक अध्ययन की विभिन्न दृष्टियाँ- अकादमी दृष्टि, पाठक औपनिवेशिक दृष्टियाँ

साहित्य के संस्कृतिभूतक अध्ययन की विभिन्न दृष्टियाँ- संस्कृतभाष्य (अणुभाषण, जेम्स जेम्स, वेबर् विनियन, डॉ. और संस्कृति), अकादमीभाष्य (वेबर् विनियन, डॉ. और संस्कृति)

मारसल (अणुभाषण, डॉ. और संस्कृति) की विचार

साहित्यशास्त्र और साहित्य के बीच में संस्कृति के रूप और साहित्य

अकादमीभाष्य संस्कृति के विभिन्न रूप और साहित्य

अनुसंधान रूप-

1. वेबर् विनियन- साहित्य के समाजशास्त्र की दृष्टि
2. वेबर् विनियन (II)- साहित्य का समाजशास्त्रीय विचार
3. अणुभाषण जेम्स- साहित्य और समाज के संस्कृतिभूतक अध्ययन
4. Escarpit Robert - Sociology of literature, London, 1965
5. Lawsonson, Diana and Swingwood, Alanhall- Sociology of literature
6. Alan Swingwood - The Novel of Revolution
7. Michel Zaratia - Fictions : The Novel and Social reality
8. Raymond Williams - The Long Revolution

- Culture and Society

9. Leo Lowenthal - Literature and the image of man.
10. ~~वस्तु ही सेवा- वस्तु ही सेवा~~
11. Louis Althusser - for Marx
12. Ajar Ahmad- In theory
13. Leela Gandhi - Post Colonialism
14. Homi Bhabha (Ed.) Nation and Narration
15. Meenakshi Gigi Durham and Douglas Kellner- Media and Cultural studies
Keywords.
16. Pramod K. Nayar - Literary theory today
17. Cumber to Eco- Towards a semiotic inquiry into T.V messages.

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किसी एक विषय का चयन करना होगा

(क) कहानी

कथा, किरण और कहानी

लोक कथा और कहानी

बॉट स्टोरी और कहानी

चूँ कहानी और हिन्दी कहानी

कहानी का विकास बौद्धिक और हिन्दी कहानी

कहानी और समाजशास्त्र

इंग्लिश पूर्व हिन्दी कहानी

इंग्लिश और उसके समाजशास्त्र

इंग्लिश और हिन्दी कहानी की प्रमुख शृङ्खलाएँ - आधुनिक कहानी, नई कहानी, समाजवादी कहानी, अलगाववादी कहानी

हिन्दी कहानी और चरित्र कला

हिन्दी कहानी और रीति कला

पाठ, पाठ्य और कहानी

पाठ- वेग बहिन (दुर्गा बारी), किलोमीटर का पोलो (अनुपम), बंगाल का नौसेना (अनिल कला), ईश्वर (अनिल), जयशंकर प्रसाद (अनिल), राजा लखन रत्न प्रसाद सिंह (अनिल में अंतर्गत), जेम्स (अनिल), अज्ञेय (गैरी) बंगाल (अनिल की नई), कर्णभद्रा (अनिल), निर्मल वर्मा (अनिल) अन्धकार (अनिल) और जेम्स (अनिल), लोक साहित्य (), लोक कविता (अनिल की कविता), युद्ध कविता (अनिल की कविता), अन्धकार (अनिल), अन्धकार (अनिल) का पठन, अन्धकार (अनिल की कविता), नन्मू भंडारी (), युद्ध (अनिल का कविता), अन्धकार (अनिल)

अनुसंधान कार्य-

1. जेम्स युद्ध- कहानी : अनुपम और किरण, पुरातन अन्धकार, दिल्ली, 1972
2. अन्धकार सिंह- कहानी : नई कहानी, लोकशास्त्री, इलाहाबाद
3. अन्धकार पाठ्य- नई कहानी : अन्धकार और अन्धकार, पुरातन पत्रिकाएँ अन्धकार, दिल्ली

4. धनंजय (सं०) - राजस्थानी कहानी : विद्या और दृष्टि
5. देवीसंका अग्रणी (सं०)- नई कहानी : सपनों और प्रकृति, राजस्थान दिल्ली, 1988
6. विद्यालयीय शिक्षा- आज की हिन्दी कहानी, राजस्थान प्रकाशन
7. स्युंसा - नई कहानी : पुनर्विचार, मेसाल परिवर्तित काल, दिल्ली
- हिन्दी कहानी : अधिष्ठान की राज्या, अजय प्रकाशन
8. विद्यालय विद्यार्थी- कुछ कहानियाँ : कुछ विचार, राजस्थान, दिल्ली
9. बालाजी कालीय- नई कहानी अधिष्ठान की पुनर्विचार, अधिष्ठान प्रकाशन, इलाहाबाद
10. देवीसंका अग्रणी- हिन्दी की सबसे कहानी, बीकानेर प्रकाशन, मेरठ
11. देवीसंका अग्रणी- विद्या के रूप, भारतीय साहित्य, नई दिल्ली
12. धनंजय धीर- अष्टम राजस्थान
13. विद्यालय विद्यार्थी- राजस्थानीयता का संकट
14. राजस्थान शिक्षा- हिन्दी कहानी : एक अलग पहलू
15. राजेंद्र चौधरी- नई कहानी : प्रकृति और पत्र
16. कनकलता - नई कहानी की पुनर्विचार
17. विनोद कर्मा- काल का संकट
18. पुनर्विचार- एक साहित्यिक की कथा

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हिन्दी-1 (सं०) लोक-साहित्य

लोक की मूलव्यवस्था, एतद्विधायी, लोक मनोव्यवस्था व समाज साहित्य का अर्थ
 हिन्दी लोक साहित्य : अजयन और अनुकूलन की दृष्टि- कर्तव्य व संकल्प
 लोक-साहित्य का अर्थ, विशेषण और मूलव्यवस्था
 काल में लोक साहित्य काली अर्थव्यवस्था और अनुकूलन
 लोक संस्कृति के अर्थ और पारसी अधिष्ठानियाँ- नया, साहित्य, संपन्न, जीवन-दर्शन
 लोकसाहित्य, अधिष्ठान नया, नया नया की प्रकृति और काल, हिन्दी की कालीन संस्कृति और पारसी
 साहित्य विचार
 लोकगीत, देवीगीत, जय संकरी, काली गीत, विद्या संकरी, अनुगीत, नया संकरी गीत, नया गीत

साहित्यिक काल- काल- लोकगीत, लोक-आयतन, पंचतंत्र, ज्ञाना ज्ञानि

दूर- लोक काल- सप्तमी, कथागी, पंचतंत्र, पौडी, लोक, संगीत, विद्विप

काल- लोक विद्विप, विद्विप ज्ञान

अनुसंधान संका-

1. पीपुल एडिशन (सं) - लोक
2. पीपुल एडिशन (सं) - लोक का आलेख
3. पीपुल एडिशन- लोक-साहित्य की दृष्टि
4. पीपुल एडिशन - लोक -साहित्य, विद्वान
5. जनगीतकाल काल- साहित्यिक लोक-काल
6. लोक काल- साहित्यिक लोक-साहित्य
7. कालिका काल- लोक साहित्य की सांस्कृतिक परंपरा
8. पीपुल एडिशन लोक-साहित्य के अर्थ
9. Zygmunt Bauman- culture as parasit
10. Any Gopin Schwartz- Archaeology and folklore
11. Valdisar Propp- Theory and history of folklore
12. Donna Rosenberg- Folklore, Myths and legends
13. S.P.Pandey and Awadheesh kr. Singh- Folk culture in India.
14. Syed Abdul latif- An Outline of the cultural history of India.
15. Dr. P.C. Muralidharan- Facets of Indian Culture
16. Krishna Murthy - Mirrors of India culture
17. Kapila Vatayayan - Traditions of Indian folk dance
18. Richman - May Ramayana.

संस्कृत (सं) साहित्यिक विद्विप-साहित्य

साहित्यिक, साहित्यिक, साहित्यिक, लोक साहित्यिक

लोक के लोक का साहित्य

2017-18

14/5/2018
19/5/2018
19/5/2018

2017-18
2017-18
2017-18

सांस्कृतिक दृष्टि, सांस्कृतिक संरचना

सांस्कृतिक उत्थान, आधुनिक उत्थान-सम

पार, सार, सारा और सारित

औपनिवेशिक दौर और हिंदी भाषा जगत, फॉर्म विविधता काल, हिंदी साहित्य काल, नारी इतिहास
सम, हिन्दी की नारी

भारत, संसार, द्वितीय युग, सारणी, सुधारवाद, राष्ट्रवाद, सामाज्यवाद विचार, सारित से विचार अंतराल
का उत्थान, उत्थान

इतिहासीय अंतराल, राष्ट्रवाद और इतिहासीयता के उत्थान

पार औपनिवेशिक हिन्दी साहित्य

सांस्कृतिक इकाई के रूप में पार

सुधारवाद, सुधारवाद

भारतीय साहित्य की उत्थान

साहित्य और विचारवाद, साहित्य की उत्थान-प्रिया में उत्थान और पार की विचारवादों का उत्थान,
साहित्यिक दृष्टि की उत्थान और विचारवाद की उत्थान-

सर्व पार- भारत (उत्थान और नारी), उत्थान (सुधार, सुधार) विचार (सम की उत्थान युग,
सुधारवाद), सार (द्वितीय युग) उत्थान (उत्थान), युग (सम उत्थान) उत्थान युग (सम उत्थान),
सुधारवाद उत्थान (उत्थान, सुधार-सुधार उत्थान, उत्थान, इतिहासीय की उत्थान) उत्थान युग (उत्थान, उत्थान
सुधार, पार) उत्थान उत्थान (उत्थान उत्थान उत्थान)

अनुसंधित संघ-

1. रमेश सुधा रम- आधुनिकता और आधुनिकीकरण
2. *Anthony J. Cascardi - The subject of Modernity*
3. *Anthony Giddens- The constitution of Society*
- *The consequences of modernity*
4. *M.Castells - The city and grassroots*
5. रमेश सुधा रम - भारत और हिन्दी उत्थान के उत्थान
6. रमेश सुधा रम - भारतीय उत्थान द्वितीय और हिन्दी उत्थान
7. डॉ. नंद- भारतीय साहित्य का उत्थान इतिहास

9. निरालं विचारों- आधुनिक साहित्य और इतिहास-बीर
9. रामदास सिंह निराल- संस्कृति के चार अक्षर
10. प्रस्ताव साहित्य- वेदान्तप्रवेश और हिन्दू इतिहास पराबन्धु हरिचन्द्र एवं साधनाथी संस्कृति
बनारस
11. D.P. Mukherji- Modern Indian Culture: A sociological Study, Bombay, 1948.
12. Raymond William - Marxism and literature
13. Terry Eagleton- Criticism and Ideology

- Ideology: An Introduction.

FROM D.C. B.S. (सं) आधुनिक हिन्दी साहित्य एवं संदर्भ

आधुनिक हिन्दी साहित्य

अन्वय नवरी - भारतेन्दु हरिश्चन्द्र

सत्य युग, सार्वी के साहित्य, लोकगीत (सत्ययुग)

संस्कृत साहित्य का बीर, बीर साहित्य

साधनाथी की संस्कृति -

अन्वय युग- साहित्य, इतिहास

एकदली साहित्य- सं. बी. कला बी.एस. सं. साहित्य युग, लोकगीत, प्रस्ताव, इतिहास

अनुसंधित साहित्य-

1. हिन्दी साहित्य: सत्य और विचार - डॉ. रामदास सिंह, राजकाश एवं सं. दिल्ली।
2. प्रस्ताव के साहित्य - साधनाथी युग, अनुसंधित प्रस्ताव, सत्य
3. हिन्दी साहित्य का अन्वयसंघ- विवेक साहित्य, लोकगीत
4. साहित्य साहित्य और अन्वय साहित्य- विवेक साहित्य, लोकगीत
5. आधुनिक साहित्य का अन्वय साहित्य- साहित्य साहित्य साहित्यक प्रस्ताव, दिल्ली।
6. साहित्यक अन्वयसंघ प्रस्ताव- साहित्य युग अन्वय, साहित्यक
7. साहित्यक साहित्य की साहित्यक- साहित्य युग अन्वय, साहित्यक
8. साहित्यक अन्वयसंघ साहित्य- साहित्य साहित्य, साहित्यक
7. साहित्य साहित्य और अन्वय- डॉ. रामदास सिंह, साहित्य साहित्य, साहित्य

9. हिन्दी नाटक के पाँच प्रकार- सुपुत्र, शैलजी
10. हिन्दी एकलकी- विद्वानस कुमार
11. रंगमंच का संघर्षशास्त्र- देवेन्द्र राज जेठू, राजकमल
12. भारतीय हिन्दी नाटक - डॉ.बी. पाठकन कवच, लोकशायी।
13. हिन्दी नाटक- कल्प सिंह, सदाशुभ प्रकाशन, दिल्ली।
14. रामकालीन हिन्दी नाटक और रंगमंच- जयदेव शर्मा, साहित्य, प्रकाशन, दिल्ली।

15. एकलकीय व्यक्तित्व का विकास- सतीश कुमार राय, सतीश प्रकाशन, मुजफ्फरपुर
16. *हिन्दी एकलकीय नाटकों की प्रथम विशिष्टता* - डॉ. प्रमोद कुमार, अमरावती

MNBC-0 (27) की प्रयोजना पत्रक हिन्दी
 साम्य-क' 3 x 6 = 18
 कल्पकाली हिन्दी 10 x 1 = 10

2018
 10/5/2018
 10/5/18
 10/5/2018

1. हिन्दी की विभिन्न रूप-संज्ञात्मक भाषा, संसार भाषा, मातृभाषा भाषा इत्यादि। 70
2. राजभाषा के प्रमुख प्रकार- शासकीय, पत्राचार, विधान, संसदीय, कलात्मक।
3. पत्रिकात्मक सभ्यता- स्वल्प और महत्त्व, निर्माण के विद्युत।

साम्य-क'

हिन्दी सम्बन्धित

1. सम्बन्ध : परिचय, वर्णन, के परिचय।
2. इंटरनेट : समर्थन प्रकाशकों का परिचय, इंटरनेट एक्सप्लोरर (नेट सॉफ्टवेयर), विश्व, जालवेब, ई-मेल, वेबसाइट और ब्राउज़र, हिन्दी के प्रमुख इंटरनेट, वेबसाइट, अफिलेडिंग, हिन्दी साफ्टवेयर प्रोग्राम।

साम्य-ग'

अनुवाद

1. अनुवाद का स्वभाव, प्रकार, महत्त्व, आदर्श अनुवाद के अभिप्राय।
2. पत्रिकात्मक सभ्यता के अनुवाद।

साम्य-घ'

राजभाषा एवं जनसंघर्ष

1. प्रयोजनमूलक हिन्दी के क्षेत्र।
2. जनसंघर्ष एवं जनसंघर्ष।
3. राजभाषा हिन्दी की पत्रिकात्मक स्थिति।

अनुसंधान प्रश्न-

1. प्रयोजन मूलक विन्दी- विनोद चोपड़े, सती प्रकाशन, दिल्ली
2. प्रयोजन मूलक विन्दी- दुर्गात झाड़े
- 2.b प्रयोजन मूलक विन्दी : 1985/87 का 53वाँ संस्करण / विनोद चोपड़े प्रकाशक - दिल्ली
3. प्रयोजन मूलक विन्दी और पाठ्यपुस्तक- डॉ. दिनेश प्रसाद सिंह, सती प्रकाशन, दिल्ली।
4. प्रयोजन मूलक विन्दी की नयी भूमिका - कौशलमय चाम्पे, लोकभारती, प्रकाशन, इलाहाबाद
5. प्रयोजन मूलक विन्दी- डॉ. मयम चोपड़ा, लोकभारती, प्रकाशन
6. प्रयोजन मूलक विन्दी- डॉ. लंक देव, मेधासत पब्लिशिंग हाउस दिल्ली।
7. प्रयोजन मूलक विन्दी- पी. लाल, लोकभारती प्रकाशन, दिल्ली।
8. अनुसंधान विज्ञान एवं पाठ्यपुस्तक- डॉ. जयश्री प्रसाद मेदिनी, सती प्रकाशन, दिल्ली।
9. राजमय सहायिका- अशोक मोहन गुप्त, प्रसाद प्रकाशन, दिल्ली।

1985/87 का 53वाँ संस्करण

1. पद्य भूमि क्या क्या करी- बसन्त, राजमय एंड सन्स, दिल्ली
2. आकाश कवीर- विष्णु प्रकाशन
3. पद्य के सारो- बहादुरी, लोकभारती प्रकाशन, इलाहाबाद
4. पुरुषोत्तम- राजमयम कलकत्ता, सती प्रकाशन, दिल्ली
5. आत्म की धरती - डॉ. विजयमय प्रसाद तिलारी, विजयमय प्रकाशन, दिल्ली।
6. अज्ञानत धनजाल- कर्णालका मय देव, राजमय प्रकाशन, दिल्ली
7. निबन्ध- प्रस्तावित निबन्ध- आर्य, राजमयी और डेव, कविता सभा है, अलोक के पुस्तक, की सभा का मुकुट कीन रहा है, सत आलोचक, कविता और राजमयम, सती और गुजरा, में इलाजम है, लाल, सदाका का लकीज।

प्रथम पाठ्यपुस्तक सिद्ध, अथवा पूर्ण सिद्ध, अथवा अज्ञानत मुक्त, अथवा अज्ञानत प्रसाद विन्दी, डॉ. विद्वानिवास सिद्ध, कौशलमय सत, विनोद, मेदिनी, अथवा विष्णुदेव सहाय, अथवा विष्णुदेव सती, कर्णालका सहाय।

अनुसंधान प्रश्न-

1. पाठ्यपुस्तक विन्दी- अथवा विजयमय प्रसाद सिद्ध, सती प्रकाशन, दिल्ली।
2. प्राथमिक विन्दी : सहायका विन्दी- डॉ. विजयमय सिद्ध, कविता सतीन अथवा, राजमय
3. आत्ममय की सहायिका- राजमय- सती, सती प्रकाशन, दिल्ली
4. आत्ममय और सहायिका- अशोक गुप्त, सती, राजमय प्रकाशन, दिल्ली

1985/87 का 53वाँ संस्करण

10/5/2018

14/6/18

Review and marking

14/6/18

BABASAHEB BHIMRAO AMBEDKAR BIHAR UNIVERSITY

MUZAFFARPUR



POST GRADUATE PROGRAMME
COURSES OF STUDY

(In accordance with the Syllabus approved by Hon'ble Chancellor)

For

M.A. HISTORY EXAMINATION

Under Choice Based Credit System (CBCS)

w.e.f. Academic Session 2018 - 20

Atul
12/3/19

Ad
12/3/19
Ravi

Blaw
12/08/2019

Gov
12/3/19

Vik
12/3/19

Ahanna
12/3/19

[Signature]
12/3/19

huf

ab-l

**CBCS Scheme of Examination and
Courses of Study for the M.A. Examination in History**

The History syllabus comprises 14 Core Course (CC), two Elective Courses (EC) are Generic Elective (GE) or Discipline Specific Elective Course (DSE), one Ability Enhancement Course (AEC) and two ability Enhancement Compulsory Courses (AECC) in two years. The students will be evaluated through end-semester examination/project evaluation and the teaching will be structured accordingly.

Structure of the two years (Four Semester) Post Graduate Degree Course CBCS :-

Semester	No. of Course/ Papers	Credit per Course paper	Total Credit	Minimum No. of Learning (In Hrs.)	No. of Core Course /Paper	No. of Elective Course/ Paper	Code of Nature of Elective Course/ Paper
I	05	05	25	250	4	4	AECC-1

SEMESTER BREAK

II	06	05	30	300	5	1	AEC-1
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SEMESTER BREAK

III	06	05	30	300	5	1	AECC-2
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SEMESTER BREAK

IV	03	05	15	150	0	3	EC-1* EC-2* DSE-1 OR GE-1
TOTAL	20	20	100	1000	14	6	

Core Course (CC): A course which should compulsorily be studied by a candidate as a requirement on the basis of subject of M.A. studies and is termed as a Core Course.

Elective Course (EC): Generally a course which can be chosen from a pool of courses (Basket) and which may be very specific or specialized or advanced or supportive to the subject/discipline of study or which provides an extended scope or

which enables an exposure to some other subject/discipline/domain or nurtures the Candidate's proficiency/ skill is called an elective course.

Discipline Specific Elective Course (DSE): Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University Institute may also offer discipline related Elective Courses of interdisciplinary nature (to be offered by main discipline/subject of study).

Generic Elective Course (GE): An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

Ability Enhancement Courses (AEC): The Ability Enhancement Course "AEC" courses are the courses based upon the content that leads to life skill enhancement.

Ability Enhancement Compulsory Courses (AECC): University will run a number a Ability Enhancement Compulsory Courses (AECC) which is qualifying in nature and student from all faculties have to qualify in all courses.

Dissertation Project/ Internship/ Industrial Training: An elective course designed to acquire special/ advanced knowledge, such as supplement study/ support study to a project work and a candidate studies such a course on his own with an advisory support by a teacher/ faculty member is called dissertation/ project.

The distribution of the six elective papers shall be - two EC, One DSE or One GE, two AECC, One AEC. Students may opt for any elective course out of a list of elective papers (Basket) offered by the parent department or any other department/ a as per his/her choice with the prior permission of the parent department.

The final CGPA/ class will be decided on the performance of the student in the 16 courses including the 14 core courses (CC) and two ECs.

The One DSE or one GE, two AECC, one AEC courses will be qualifying in nature and a student has to score at least 45% marks in these courses, Grades will be awarded separately for these courses, however, performance in these elective courses will not be considered for awarding the final CGPA/class.

[Handwritten signatures and dates]
AP 17/11/15
12-11-15
12-11-15
12-11-15

M.A.

Semester- I:	CC-1 to CC-4 + AECC-1
Semester- II:	CC-5 to CC-9 + AEC-1
Semester- III:	CC-10 to CC-14 + AECC-2
Semester- IV:	EC-1 and EC-2 + DSE-1 or GE-1

Evaluation of Performance under Semester System:

The performance of a student in each paper will be assessed on the basis of a continuous Internal Assessment (CIA) of 30 marks and the End of Semester Examination (ESE) consisting of 70 marks.

The components of CIA are follows:

(i)	Two mid-semester written tests of one hour duration each	15 Marks
(ii)	Seminar/Quiz	05 Marks
(iii)	Assignment	05 Marks
(iv)	Punctuality and Conduct	05 Marks
Total:		30 Marks

The performance of a student in the elective papers AEC and AECC in each semester addressing the issues of

- (i) Skill Development
- (ii) Human Values and Professional Ethics and Gender Sensitization
- (iii) Environment and sustainability and Swachchha Bharat Abhiyan Activities shall be assessed on the basis of a continuous Internal Assessment (CIA) of 50 marks and the End Semester Examination (ESE) consisting of 50 marks.

The components of CIA in these papers shall be as follows:

(i)	Two mid-semester written tests of one hour duration each	10 Marks
(ii)	Seminar/Quiz	10 Marks
(iii)	Assignment	15 Marks
(iv)	Discharge of Institutional Social Responsibility/ Community Services (report to be submitted)	15 Marks
Total:		50 Marks

[Handwritten signatures and dates are present at the bottom of the page, including names like 'RAC 12/11/15', 'A.P. 12/13/15', 'B', 'Sanghvi', and 'R. K. S.']

M.A. History

Semester- I

- CC-1: Historiography
CC-2: History of Early Civilizations and Medieval World.
CC-3: Early Medieval India
CC-4: Science & Technology in India
AECC-1: Environmental Sustainability (3 Credits) &
Swachhh Bharat Abhiyan Activities (2 Credits)

Semester- II

- CC-5: History of Ideas
CC-6: History of Europe & Modern World
CC-7: History of Bihar (From the Earliest time)
CC-8: Society and Economy in Indian History
CC-9: Contemporary India- 1947 onwards
AEC-1: IT Skill Development

Semester- III

- CC-10: National Movements in India
CC-11: Indian Historians
CC-12: South Asia- 1950 onwards
CC-13: USA 1860- 1990
CC-14: Revolution and Revolutionary thought.
DSE-2: Human Values & Professional Ethics (3 Credits) &
Gender Sensitization (2 credits)

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Detail Course of Study
2nd & 3rd Semester - I
Semester- IV

Elective Course (EC)- 1

- (a) Tribal Movements
- (b) Dalit Movements
- (c) Gender Movements
- (d) Environmental Movements
- (e) Economic Movements

Elective Course (EC)- 2

- (a) Indian Theatre
- (b) Indian Cinema
- (c) Media
- (d) Human Rights
- (e) Disaster Management

DSE- 1

- (a) Introduction
- (b) Management
- (c) New Public Administration
- (d) Financial Administration
- (e) Integrity in Administration in the context of corruption

GE-1

- (a) Social Problems in India

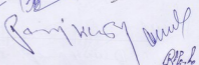
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Ranjit Singh


Suggested Readings :

- | | |
|----------------------------|--|
| 1. E.H. Carr, | What is History (also in Hindi) |
| 2. Arthur Marwick, | Nature of History |
| 3. R.G. Collingwood, | The Idea of Past |
| 4. B. Sheikh Ali, | 'History' Its Theory and Methods |
| 5. E. Shridharan, | Indian Historiography |
| 6. Lal Bahadur Verma, | Understanding History |
| 7. Lal Bahadur Verma, | इतिहास कि कला कि |
| 8. Irfan Habib, | Interpreting Indian History |
| 9. D.D. Kosambi, | History and Society |
| 10. Ranjit Guha, | Subaltern Studies Volumes |
| 11. Buddh Prakash, | इतिहास कला |
| 12. Govind Chandra Pandey, | इतिहास सत्य कि दृष्टि |
| 13. Jharkhande Choubey, | इतिहास कला |
| 14. Parmanand Singh, | इतिहास कला |
| 15. John Tosh, | The Pursuit of History |
| 16. O.H. Sabine, | A History of Political Theory |
| 17. B.K. Jha, | उत्तर आधुनिक धर्म, 2 अंश कि |
| 18. Gangadutt Tiwary, | उत्तर आधुनिक धर्म कि इतिहास, 2 अंश कि |
| 19. Edward Said, | Orientalism |
| 20. Leela Gandhi, | Postcolonial Theory: A Critical Introduction |

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 Parmanand Singh

CC-2: HISTORY OF EARLY CIVILIZATIONS AND MEDIEVAL WORLD

Unit- I : Egyptian Civilization

- (a) Sources for the study of ancient Egyptian history
- (b) The Dynasties of ancient Egypt- An outline
- (c) Old Kingdom- With reference to Pyramid Age
- (d) The Middle Kingdom and New Kingdom- Main features with special reference to Thutmose II and Religious innovations of Akhnaton

Unit- II : Mesopotamian Civilization

- (a) Sources for the study of the Mesopotamian history
- (b) The Semites and the achievements of Sargon of Akkad
- (c) Hammurabi and his Law Code
- (d) Rise and decline of the Assyrian empire

Unit- III : Harappan Civilization & Vedic Civilization

- (a) Theories related to the origin of the Harappan Civilization
- (b) Geographical extent of the Civilization with special reference to some of the important sites- Mohenjodaro, Harappa, Kalibangan, Rakhigarhi, Lothal & Dholavira
- (c) Main Features of the Civilization- economy, society, town-planning & religion
- (d) Decline of the Civilization
- (e) Theories related to the origin of the Vedic Civilization
- (f) Contents & nature of Vedic Civilization

Unit- IV : Medieval Europe

- (a) Origin & Growth
- (b) Features and decline of Feudalism
- (c) Crusades- Causes and Effects
- (d) Revival of Urban Centres

Unit- V : Medieval Islam (A.D. 600- 1200 A.D.)

- (a) Rise of Islam in the 7th Century
- (b) Origin & Development of Caliphate (632-661 A.D.)
- (c) Main Features of the Umayyad Caliphate (661- 750 A.D.)
- (d) Abbasid Caliphate- Nature & Significance
- (e) Cultural and Literary Contributions of the Arabs

Suggested Readings:

1. J.H. Breasted, A History of Egypt
2. M. Murnay, The Splendour that was Egypt
3. V. Gordon Childe, New Light on the Most Ancient East (also in Hindi)

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4. Georges Roux, Ancient Iraq
5. Sushil Madhav Pathak, *Five of the greatest empires in the world*
6. C.P.N. Sinha, *World History*
7. Dhanpati Pandey, *World History*
8. Walter A. Fairservis, Jr., *The Roots of Ancient India- I*
9. Kiran Thapalyal, *World History*
10. Alchin & Alchin, *Birth of Indian Civilization*
11. R.N. Nandi, *Aryans Revisited*
12. Thompson & Johnson, *An Introduction to Medieval Europe (300-1500 AD)*
13. Stephenson and Lyod, *Medieval History*
14. Martin, Scott, *Medieval Europe*
15. S.C. Easton, *A Brief History of Western World*
16. John Bowle, *History of Europe*
17. M. Keen, *A Pelican History of Medieval Europe*
18. Dhanpati Pandey, *World History*
19. V. Nirottam, *World History*
20. Thomas Arnold, *The Legacy of Islam*
21. Asghar Ali Engineer, *The Origin and Development of Islam*
22. P.K. Hitti, *History of the Arabs*
23. Bernard Lewis, *Arabs in History*
24. M.A. Shaban, *Islamic History (600- 750 AD)*
25. K.P. Sahu, *World History*
26. R.S. Sharma, *World History*
27. D.N. Jha, *World History*
28. Jha & Srimali, *World History*
29. Upendra Singh, *History of Ancient India and Early Medieval India*
30. Burton Stein, *History of India*

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CC- 3 : EARLY MEDIEVAL INDIA (600- 1200 A.D.)

Unit- I : **Approaches to Early Medieval Indian History**

- (a) Transition from Ancient to Early Medieval India
- (b) Harshavardhan- Sources, Extent of Empire & Estimate
- (c) The Palas- Cultural Contributions

Unit- II : **The Rajputs**

- (a) Origin of the Rajputs
- (b) Political history of
 - (i) The Gurjara Pratiharas
 - (ii) Chandellas &
 - (iii) Chauhans

Unit- III : **Ascendancy of the South**

- (a) Political history of the Pallavas, the Rashtrakutas & the Cholas
- (b) Society, Economy & Administration
- (c) Shankaracharya

Unit- IV : **India and the Arabs**

- (a) Political Contact
- (b) Cultural Contact

Unit- V : **Regional Styles of Art & Architecture**

- (a) Temple Architecture
- (b) Sculpture

Suggested Readings:

1. Ram Sharan Sharma, Early Medieval Indian Society
2. Ram Sharan Sharma, *गणसमूहों के उत्थान और शक्ति*
3. R. S. Tripathi, History of Kanauj
4. D. Devahuti, Harsha- A Political Study
5. R. C. Mazumdar, History of Bengal, Vol.- I
6. C. Minakshi, The Pallavas of Kanchi
7. K.A.N. Shastri, A History of South India (In hindi also)
8. K.A.N. Shastri, The Cholas
9. N.R. Ray, History of the Bengali People
10. T. Watters, On Yuan Chwang's travels
11. Q. Ahmad (ed), India of Alberuni
12. Burton Stein, Essays on South Indian History
13. R. Champakalakshmi, Trade, Meology and Urbanization, South India 300 BC-AD1300
14. Awadh Kishore Prasad, *शिव का उत्थान और शक्ति*

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15. Om Prakash Prasad, Decay and Revival of Urban Centres in Early South India (600-1200 AD)
16. B.P. Mazumdar, Socio-Economic History of Northern India
17. B.D. Chattopadhyaya, The Making of Early Medieval India
18. R.S. Sharma, Indian Feudalism
19. S.C. Roy, Dynastic History of Northern India
20. B.N.S. Yadav, Society and Culture in North India in the 12th Century
21. H.R. Hall, Trade and State Craft in the age of the Cholas
22. Prashanta Gaurav, $\text{प्रशासनात्मक संस्था}$

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CC- 4 : SCIENCE AND TECHNOLOGY IN INDIA

Unit- I : **Science and Technology in Ancient India**

- (a) Iron Technology as an Agent of Change
- (b) Agriculture: Soil, Technology, Tools, Irrigational Measures

Unit- II : **Progress of Science and Technology during Medieval Period**

- (a) Scientific Activities during Sultanate Period
- (b) Devices and Technology during Mughal Period

Unit- III : **Indian Perception and Interpretation of Western Science and Technology**

- (a) Growth of Scientific and Technological growth of Education
- (b) Progress of Science and Technology in Modern India-
Transport, Communication, Environment & Irrigation

Unit- IV : **Major Scientific Achievements in Contemporary India**

- (a) Agriculture, Space, Industry and Telecommunications

Unit- V : **Some Indian Scientists**

Jivak, Charak, Aryabhata, Al Biruni, Abul Fazal, J.C. Bose, C.V.Raman

Suggested Readings:

1. Arnold David, Science, Technology and Medicine in Colonial India
2. D.P. Chattopadhyaya, History of Science in India in 2 Vols.
3. V.K. Thakur (ed.), Science, Technology and Medicine in Indian History
4. Satya Prakash, *Science and Technology in Ancient India*
5. Pratik Gaurav, *Science and Technology in Medieval India*
6. O.P. Jaggi, Science and Technology in Medieval India
7. Irfan Habib (ed.), *Science and Technology in Medieval India*
8. Irfan Habib, Science and Technology during Mughal Period
9. A. Rahman, *Science and Technology in Medieval India*
10. A. Rahman, *Science and Technology in Medieval India*
11. A.K. Biswas, Science in India
12. Dharmapal, Indian Science and Technology in the 18th Century
13. Anil Kumar, Disease and Medicine in India; A Historical Overview
14. Gyan Prakash, Another Reason: Science and the Imagination
15. S.N. Sen, Scientific and Technical Education in India
16. R. S. Anderson, Building Scientific Institutions in India
17. S. Sangwan, Science, Technology and Colonization: Indian Experience

Ability Enhancement Compulsory Course (AECC) 1 :

Environmental Sustainability : 3 Credits

Swachha Bharat Abhiyan Activities : 2 Credits

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SEMESTER- II
(Even Semester)

CC- 5 : HISTORY OF IDEAS

Unit- I : History of Ideas, ancient and Medieval

- (a) Plato: Ideal State
- (b) Kautilya: Saptang Theory of State
- (c) St. Augustine: State

Unit- II : Modern Ideas

- (a) Machiavelli- State
- (b) Hobbes- Locke
- (c) Rousseau- General Will
- (d) M.K. Gandhi- State
- (e) B.R. Ambedkar- Social Justice

Unit- III : Utilitarian

- (a) Jeremy Bentham
- (b) J.S. Mill

Unit- IV : Dialecticals

- (a) Hegel
- (b) Karl Marx

Unit- V : Liberals

- (a) M.K. Gandhi- State
- (b) B.R. Ambedkar- Social Justice

Suggested Readings:

1. C.L. Wayer, Political Thought
2. G.H. Sabine, A History of Political Theory
3. Bertrand Russell, A History of Western Philosophy
4. B.K. Jha, *पुराण मूर्ति शास्त्र*, 2 अंश में
5. Gangadutt Tiwary, *मौर्य मूर्ति शास्त्र*, 2 अंश में
6. C.E.M. Joad, Guide to the Philosophy of the Morals and Politics
7. M. Lancaster, Masters of Political Thought
8. V.R.Mehta, Foundations of Indian Political Thought
9. V.P. Verma, Studies in Hindu Political Thought and its Metaphysical Foundations.
10. V.P. Verma, Modern Indian Political Thought

11. R. Vaughan, A History of Political Thought
12. N.K. Bose, Studies of Gandhism
13. K.P. Kanunakaran, New perspectives on Gandhi
14. B.P. Sinha, Studies in Kautilya's Arthashastra
15. Robert L. Heilbroner, The Worldly Philosophers
16. R.K. Choudhary, Political Ideas and Institutions in Kautilya Arthashastra
17. E. Barker, Plato and his Predecessors
18. E. Barker, Aristotle's Politics
19. E. Barker, Greek Political Theory
20. Antonio Gramsci, Selections from Prison Notebooks
21. Chou-Hsiang-kang, Political Thought of China
22. Louis Althusser, For Marx
23. Anthony Giddens, Modern Political Ideas, 2 Vols.
24. D. Mc Lella, The Thought of Karl Marx
25. Dhananjay Keer, Dr. B. R. Ambedkar: Life and Mission
26. R.S. Sharma, Aspects of Political Ideas and Institutions in Ancient India
27. Will Durant, Story & Philosophy
28. Karl R. Popper, The Poverty of Historicism
29. Karl R. Popper, The Open Society and its Enemies
30. J. S. Mill, Utilitarianism
31. Edward Said, Orientalism
32. Leela Gandhi, Post Colonial Theory
33. Andre Gunder Frank, Orient
34. *संविधान विज्ञान का अर्थ - एक नए युग का अर्थ, अर्थ*

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CC- 6 : HISTORY OF EUROPE AND MODERN WORLD (1919-2000)

- Unit-I : **Post World War – I Developments**
- (a) Paris Peace Conference and the Peace Treaties
 - (b) League of Nations
 - (c) French Quest for Security and Locarno Pact 1925
 - (d) Impact of Economic Depression in 1930
- Unit- II : **Rise of Totalitarianism in Europe**
- (a) Rise of Mussolini and the Fascist Policy
 - (b) Rise of Hitler and Nazism
 - (c) Causes and Significance of the Spanish Civil War
- Unit- III : **History of Russia till 1945**
- (a) USSR under Lenin, & Stalin
- Unit- IV : **World War II and its Aftermath**
- (a) Causes
 - (b) Impact
 - (c) U.N.O.
- Unit- V : **Cold War and NAM**
- (a) Origin and manifestation of Cold War
 - (b) Disintegration of the Soviet Union
 - (c) Non-Aligned Movement- Origin, Concept and Relevance

Suggested Readings:

1. F. Lee Benna, Europe since 1914
2. A.J.P. Taylor, Origins of the Second World War
3. E. M. Barns, Western Civilization, Vol- III
4. E.H. Carr, International Relations between the Two World Wars- 1919- 1939
5. Norman Lowe, Mastering Modern World History
6. G.M.S. Hardy, Short History of International Affairs 1920-1939
7. S. N. Dhar, International Relations and World Politics since 1919
8. Parth Sarthi Gupta, *वृत्तम मम गीतम्*, १९९-२
9. Lal Bahadur Verma, *वृत्तम मम गीतम्*, १९९-२
10. Devendra Singh Chouhan, *असंश्लेष वृत्तम*, १९९-२
11. C. Woodroff, Modern World
12. M. Marriot, International Relations between the Two World Wars

CC- 7 : HISTORY OF BIHAR

- Unit - I : **History of Bihar- 600 BC to 600 AD**
- (a) State formation in Bihar
 - (b) Growth of the kingdom of Magadh from 6th Century BC- 200 BC
 - (c) Archaeology & History of Palliputra
 - (d) Nalanda, Vikramshila
- Unit- II : **History of Bihar under the Sultunate and Mughals**
- (a) Educational Centres of Early Medieval Bihar
 - (b) Contributions of Afghans & Mughals
 - (c) Karnatas of Mithila
 - (d) Sufism and its impact on Bihar
 - (e) Vidyapati
 - (f) Patna- Azimabad as Socio- Cultural Centre
- Unit- III : **Beginning of Modern Bihar**
- (a) Early European Trading Companies in Bihar
 - (b) Impact of Permanent Settlement of 1793
 - (c) Revolt of 1857- Role of Veer Kunwar Singh
- Unit- IV : **Creation of Modern Bihar (1912)**
- (a) Role of Bihari Press
 - (b) Makers of Modern Bihar with special reference to Sachchidanand Sinha, Mahesh Narayan and Ali Imam
- Unit- V : **National Movement in Bihar**
- (a) Champaran Movement
 - (b) Non-Cooperation Movement
 - (c) Civil Disobedience Movement
 - (d) Quit India Movement
 - (e) Kisan Sabha Movement

Suggested Readings:

1. B. P. Sinha (ed.), Comprehensive History of Bihar, Vol. - I, Part- I & II
2. D.R. Patil, Antiquarian Remains in Bihar
3. R.R. Diwakar, Bihar Through the Ages
4. Q. Ahmad, Bihar Through the Ages
5. R.K. Choudhary, History of Bihar
6. R. K. Choudhary, University of Vikramshila
7. Yogendra Mishra, An Early History of Vaishali
8. R.S. Sharma, The State of Barna Formation in the Mid-Ganga Plains (also in Hindi)

9. S.H. Askari & Q. Ahmad (ed.), Comprehensive History of Bihar, Vol. II, Part- I & II
10. K.K. Dutta and V.A. Narain (ed.), Comprehensive History of Bihar, Vol. III, Part- I & II
11. V. K. Thakur, Urbanization in Ancient India
12. Pramodanand Das & Kumar Amrendra, *Sheer ghatas ud sangh*
13. Amarnath Singh, History of Gaya
14. Upendra Thakur, History of Mithila
15. K.K. Dutta, Biography of Kunwar Singh and Amar Singh
16. J.N. Sarkar, Glimpses of Medieval Bihar Economy
17. S. Gopal, Patna in the 19th Century
18. K.K. Dutta, History of Freedom Movement in Bihar (also in Hindi)
19. S. N. Arya, Some Aspects of Socio-Economic significance of the Pilgrimage of Gaya in the Early
20. S. N. Arya, Medieval Period- An inscripational survey
21. Ranjan Sinha, Aspects of Society and Economy of Bihar (1765- 1856)
22. Kumar Ramvijay, Role of the Middle Class in Nationalist Movement (1912- 1947)
23. R.S. Sharma, *संस्कृत के विकास में बिहार*

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13. Motichandra, Trade and Trade Routes in Ancient India
14. B.D. Chattopadhyaya, Coins and Currency System in South India
15. Q. Ahmad, Alberuni's India (सर्वज्ञान संस्कृत)
16. Dayaram, The Status of Women in India
17. Balkrishna, Commercial Relations between India and England
18. D.R.Gadgil, Origin of the Modern Indian Business Class
19. J. Sarkar, Economics of British India
20. Gyan Prakash Sharma, Peasants and the Indian Congress
21. A. R. Desai, Peasant Strength in India
22. V.K. Thakur, Peasants in Indian History

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CC-9 : CONTEMPORARY INDIA

Unit- I : The Aftermath of the Partition and its Legacy

- (a) Interpretations of Partition
- (b) Making of Indian Constitution
- (c) Integration of Princely States into Indian Union
- (d) Indian Foreign Policy- Evolution & Development

Unit- II : State and Nation in the Context of Social Change

- (a) Linguistic State re-organization
- (b) Linguistic Debates
- (c) Tribal Politics
- (d) Ethnic and Regional Movements

Unit- III : Social and Political Dynamics of Democracy

- (a) Education and Social Change
- (b) Challenges to Indian Democracy
- (c) Caste and politics in Contemporary India
- (d) Dalit Politics in Contemporary India

Unit- IV : Gender and Politics in Contemporary India

- (a) Feminist Movements
- (b) Women's Search for Political Power

Unit- V : Agricultural and Industrial Development

- (a) Land Reforms
- (b) Agrarian Struggles
- (c) Economic Reforms

Suggested Readings:

1. D.A. Lal & Howard, Brasted, Freedom, Trauma, Continuities: North India and Independence
2. Bipon Chandra etc., India After Independence (also in Hindi)
3. Ramchandra Guha, India After Gandhi
4. Mushirul Hasan, Legacy of a Divided Nation: India's Muslims since Independence
5. Ranbir Samadar, A Biography of the Indian Nation
6. Romila Thapar, Another Millennium
7. Paul Brass, The Language and Politics of Indian Since Independence
8. A.R. Desai, Agrarian Struggles in India After Independence
9. Kumkum Sangari & Suresh Vaid (eds.), Recasting Women
10. Nirja Gopal Jajal (ed.), Democracy in India
11. Sugata Bose & Ayesha Jalal (eds.), Nationalism, Democracy and Development: State and Politics in India

12. Sunil Khilnani, The Idea of India
13. D.D. Basu, The Constitution of India
14. Mushirul Hasan & Nariki Nakazato (eds.), The Unfinished Agenda: Nation Building in South Asia
15. Ram Chandra Guha, India After Nehru
16. Radha Kumar, The History of Doing
17. Manoj Sinha (ed.), समाजशास्त्र और समाज परिवर्तन
18. N.N. Vohra & Satyasachi Bhattacharya (eds.), Looking Back- India in 20th Century (also in Hindi)
19. Shreedhar Narain Pandey, Social Education and Social Changes in Bihar
20. Dr. Vijay Kumar, समाज और समाजशास्त्र

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Ability Enhancement Course (AEC) – 1

AEC- 1 : ARCHIVES AND MUSEUMS

1. Defining Museums and Archives
2. History of the Setting up of Museums: Case Study of Indian Museum, Kolkata
3. History of the Setting up of Archives: Case Study of National Archives of India, New Delhi
4. New Kinds of Museums and Archives: Virtual; Digital; Crafts; Media


Suggested Readings:

1. A Guide to the National Museum, New Delhi: National Museum, 1997
2. O.P. Agrawal, Essentials of Conservation and Museology
3. O. P. Agrawal, ~~ग्रन्थसंग्रहालयों में संग्रहण और संरक्षण~~
4. G. Edson & D. David, Handbook for Museum
5. Tapati Thakurta Guha, Mounments, Objects, Histories: Institutions of Art in Colonial India
6. Y.P. Kathpalia, Conservation and Restoration of Archive Materials
7. J. Ridener, From Folders to Post Modernism: A Concise History of Archival Theory
8. Journal of the State Archives, (Abhilekh Bihar) (Also in Hindi)


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SEMESTER- III

CC- 10 : INDIAN HISTORIANS

Unit- I : **Early Historians of India**

- (a) Banbhatta
- (b) Kalhana
- (c) Ziyauddin Barani

Unit- II : **Nationalist Historians**

- (a) K.P. Jaiswal
- (b) Jadunath Sarkar

Unit- III : **Liberals**

- (a) S.H. Askari
- (b) R.C. Majumdar
- (c) K.K. Dutta
- (d) Md. Habib

Unit- IV : **Marxists**

- (a) R.P. Dutta
- (b) D.D. Kosambi
- (c) R. S. Sharma
- (d) Bipan Chandra

Unit- V : **Feminists**

- (a) Veena Mazumdar
- (b) Uma Chakravarti

Suggested Readings:

1. V.S. Pathak, *Ancient Historians of India*
2. Shankar Goyal, *Recent Historiography in Ancient India (also in Hindi)*
3. A.K. Warder, *Introduction of Indian Historiography*
4. R.K. Mazumdar & A. N. Srivastav, *Historiography*
5. B.N. Puri, *Historiography of Ancient India*
6. Bharti S. Kumar, *Historiography and Historians of Sultanate Period*
7. K.A. Nilkantha Shastri, *A History of South India*
8. E. Shreedharan, *Indian Historiography (ग्रंथसंग्रह - इतिहास)*
9. Jadunath Sarkar, *History of Aurangzeb, Vol. I to V*
10. K. A. Nizami, *On History and Historians of Medieval India*
11. Mohiul Hasan (ed.), *Historians of Medieval India*
12. Satish Chandra, *सम्राज्यवाद और उसका इतिहास, 1519-1705*
13. Harbans Mukhia, *Historians and Historiography during the Reign of Akbar*
14. Jagdish Narayan Sarkar, *History of History Writing in Medieval India*

Handwritten notes and signatures at the bottom of the page, including the date 12/3/13 and various initials.

15. Kiran Pawar, Jadunath Sarkar: A Profile
16. S.N. Mukherjee, Citizen Historian
17. Jaysree Mishra, *Shree ni Shree gharanae ahi jee shree*
18. Sabyasachi Bhattacharya & Romila Thapar (eds.), *Situating Indian History: For Sarvapalli Gopal*
19. Tarachand, *Material and Ideological Factors in Indian History*
20. K.A. Nilkanth Shastri & H.S. Ramanna, *Historical Method in Relation to Indian History*
21. S.P. Sen (ed.), *Modern Historiography*
22. S.P. Sen (ed.), *Dictionary of National Biography (3 Vols.)*

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CC- 11: SOUTH ASIA 1950 ONWARDS

Unit - I : **Post Colonial South Asian States and its Political Process**

- (a) India
- (b) Pakistan
- (c) Bangladesh
- (d) Nepal
- (e) Sri-Lanka

Unit- II : **SAARC**

- (a) Origin
- (b) Achievement
- (c) Assessment

Unit- III : **Ethno-Nationalist Conflict with Special Reference to Religion**

- (a) Pakistan
- (b) Sri-Lanka
- (c) India
- (d) Bangladesh

Unit- IV : **Globalization and its Impact on the Society and Economy of South Asia with Special Reference to India**

- (a) Women
- (b) Cinema
- (c) Broadcasting Media
- (d) Agriculture
- (e) Industry

Unit - V : **Indian Diaspora**

- (a) Concept of Diaspora
- (b) Categories of Indian Diaspora
- (c) India's Policy towards Diaspora

Suggested Readings:

1. Sugata Bose and Ayesha Jalal, *Modern South Asia: History, Culture, Political Economy*
2. D.A. Low & Howard Brasted (ed.), *Freedom Trauma, Continuities: Northern India and Independence*
3. Tao Yong Tan and Gyanesh Kudasiya, *The Pfaermath of Partition in South Asia*
4. Subho Basu & Suranjan Das (ed.), *Electoral Politics in South Asia*
5. Ayesha Jalal, *Democracy and Authoritarianism in South Asia: Comparative and Historical Perspectives*

6. Mushirul Hasan & Nariaki Nakazata (eds.), *The Unfinished Agenda: Nation Building in South Asia*
7. Patricia Jeffery & Amrita Basu (ed.), *Appropriating Gender: Women's Activism and Politicised Religion in South Asia*
8. Stanley J. Tambiah, *Leveling Crowds: Ethno Nationalist Conflicts and Collective Violence in South Asia*
9. Stephen P. Cohen, *India Emerging Power*
10. Achin Vanik, *India in a Changing World: Problems, Limits and Successes of its Foreign Policy*
11. Ranvir Samadar & Helmut Reifeld (eds.), *Peace as Process: Reconciliation and Conflict Resolution in South Asia*
12. Rita Manchanda (ed.), *Women, War and Peace in South Asia Beyond Victimhood to Agency*
13. Anuradha M. Chenoy, *Militarism and Women in South Asia*
14. David Page, William Crawley, *Satellites our South Asia: Broadcasting, Culture and Public Interest*
15. Peter Van De Veer (ed.), *Nation and Migration: The Politics of Space in the South Asian Diaspora*
16. Carla Petievich (ed.), *The Expanding Landspace: South Asia and the Diaspora*
17. Vijay Prasad, *The Karma of Brown Folk*
18. Amitava Kumar, *Passport Photos*
19. Papiya Ghosh, *Partition and the South Asian Diaspora- Extending the Sub-Continent*
20. Jackie Assayaag & Veronique Beni (eds.), *Home in Diaspora, South Asian Scholars and the West*
21. Stanley Wolpert, *A New History of India*
22. Bipan Chandra, *India Since Independence*
23. Aditya Mukherjee, *India Since Independence*
24. Mridula Mukherjee, *India Since Independence*

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CC- 12 : UNITED STATES OF AMERICA 1860- 1990

- Unit - I : **The American Civil War**
(a) Causes
(b) Impact, Reconstruction and radical Reconstruction
(c) Assessment
(d) Role of Abraham Lincoln
- Unit - II : **Post Civil War Period**
(a) Industrial growth and transformation in the post reconstruction period.
(b) The Progressive Era
(c) Role of Theodore Roosevelt, Woodrow Wilson and the progressive.
- Unit- III : **Emergence of USA as a World Power**
(a) Overseas Expansion- China, Pacific & Caribbean
(b) Relation with Japan
(c) U.S.A. in the First World War and the Paris Peace Conference
- Unit- IV : **Economic Depression and Second World War**
(a) Causes and Consequences of economic depression of 1929
(b) New Deal Policy of F.D. Roosevelt
(c) U.S.A. in the Second World War and the U.N.O.
(d) The U.S.A. as a World Power.
- Unit- V : **People's Movements**
(a) Civil Rights Movement
(b) Labour Movement
(c) Populist Movement
(d) Feminist Movement

Suggested Readings:

1. J.S. Allen, Reconstruction, the Battle of Democracy, 1856-1876
2. H.K. Beale, Theodore Roosevelt and the Rise of America World Power
3. K.M. Stamp, The Era of Reconstruction
4. J.H. Timberlake, Prohibition and the Progressive Movement, 1900- 1920
5. A. Tocqueville, Democracy in America
6. N.J. Ware, The Labour Movement in the United States
7. Henry B. Parkes, A History of United States of America
8. Kauleshwar Roy, *अंग्रेजों की नीति*
9. Kiran Datar, *अंग्रेजों की नीति में परिवर्तन*
10. Banarasi Pd. Saxena, *अंग्रेजों की नीति में परिवर्तन*
11. Panchanan Mishra & Srivastav etc., *अंग्रेजों की नीति में परिवर्तन*
12. T. Harry William, American History: A Survey
13. Mathura Lal Sharma, *अंग्रेजों की नीति में परिवर्तन*

CC- 13 : NATIONAL MOVEMENT IN INDIA

Unit-I : **Beginning of Indian Nationalism**

- (a) Features of Indian Nationalism, Types and Stages of Indian Nationalism
- (b) Anti Colonial Movements- Pre 1857 Movements, Wahabi, Farazi, Santhal
- (c) Congress- Moderates and Extremists
- (d) Partition of Bengal and the Swadeshi Movement

Unit- II : **Gandhian Ideology and Movements**

- (a) Gandhian Ideology: A Critique
- (b) Non-Cooperation Movement
- (c) Civil Disobedience Movement
- (d) Quit India Movement

Unit- III : **Revolutionaries and Left Wing Movement**

- (a) Revolutionary Movements
- (b) Peasant Movements
- (c) Working Class Movement
- (d) Left Wing Ideologies and Movements- Communists and the Congress Socialists.

Unit- IV : **Constitutional Changes and Nationalist Response**

- (a) Indian Councils Acts of 1861, 1892 and 1909
- (b) Government of India Act of 1919, Swarajists, Simon Commission, Nehru Report, Communal Award
- (c) Government of India Act, 1935, Working of Congress Ministries, Cripps Mission, Cabinet Mission

Unit- V : **Communal Politics and Partition**

- (a) Emergence of Communal Consciousness
- (b) Muslim League and Demand for Pakistan
- (c) Hindu Mahasabha and R.S.S.
- (d) Reactions to Pakistan demand and Partition
- (e) Secular Response to Communalism

Suggested Readings:

1. Sumit Sarkar, Modern India (Also in Hindi)
2. Bipan Chandra & Aditya Mukherjee, India's Struggle for Freedom (Also in Hindi)
3. Bipan Chandra, Communalism and Nationalism in India (Also in Hindi)
4. Shekhar Badopadhyaya, From Plassey to Partition (Also in Hindi)
5. Rajat K. Ray, The Felt Community

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Dhanraj
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6. Rajat K. Ray, Urban Roots of Nationalism
7. A. R. Desai, Social Background of Indian Nationalism (Also in Hindi)
8. A.R.Desai, Agrarian Struggles in India
9. Tarachand, Freedom Movement in India 4 Vols. (Also in Hindi)
10. R.P. Dutt, India Today (Also in Hindi)
11. Anil Seal, Emergence of Indian Nationalism
12. Satya M. Roy, *सत्यम रॉय का अहिंसक आंदोलन*
13. K.N. Panikar, (ed.), Left and Nationalist Movement in India
14. Bisheswar Prasad, Bondage and Freedom, 2 Vols.
15. Judith M. Brown, Mahatma Gandhi and his Rise to Power
16. Gyanendra Pandey, Construction of Communalism in a North Indian State
17. Mushirul Hasan, Communalism and National Politics
18. G.N. Singh, Constitutional Development in Modern India
19. B.B. Mishra, Administrative History of Modern India
20. Ayodhya Singh, *सत्यम रॉय का अहिंसक आंदोलन*

CC- 14: REVOLUTION AND REVOLUTIONARY THOUGHTS

Unit- 1 : **English Revolution**

- (a) Industrial Revolution
- (b) Civil War
- (c) Restoration
- (d) Glorious Revolution
- (e) Bill of Rights, Acts of Settlement

Unit- 2 : **American Revolution**

- (a) Constitution Making
- (b) Despotism and Republicanism
- (c) Democracy & Slavery
- (d) Causes & Nature

Unit- 3 : **Russian Revolution**

- (a) Class and State
- (b) Revolution
- (c) Causes & Nature

Unit - 4 : **Chinese Revolution**

- (a) New Democracy
- (b) Cultural Revolution
- (c) Causes & Nature

Unit- 5 : **Gandhian Ideology**

- (a) Ahimsa, Swaraj
- (b) Swadeshi, Satyagraha
- (c) Education

Suggested Readings :

1. Thomas Hobbes, *Behemoth or the Long Parliament*, Oxford: Clarendon Press, New York, Oxford University Press, 2010
2. John Locke, *Two Treatises of Government* Cambridge (Cambridge Shire): New York: Cambridge University Press, 1988
3. Vladimir I Lenin, *State and Revolution*, London, New York, Penguin, 1992
4. Mao Tse Tung, *Selected Works* (Peking: Foreign Language Press, 1960)
5. M.K. Gandhi, *Hind Swaraj and Other Writing*, Cambridge, New York, Cambridge University Press, 2009

Ability Enhancement Compulsory Course (AECC) 2 :

- Unit-1 : Gandhi
- Unit-2 : Ambedkar
- Unit-3 : Jyotiba Phule
- Unit-4 : Sri Narain Swamy

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SEMESTER- IV

POPULAR MOVEMENTS

ELECTIVE COURSE (EC)- 1

Unit- 1 : **Tribal Movements**

- (a) Pre 1857 tribal Movements- Kol, Santhal
- (b) Post 1857- Birsa Munda, Tana Bhagat
- (c) Formation of Jharkhand State

Unit- 2 : **Dalit Movements**

- (a) Early Dalit Movements in Western India
- (b) Early Dalit Movements in South India
- (c) Ambedkar & Dalit Movement, Dalit Panthers

Unit- 3 : **Gender Movements in India**

- (a) Women & Social Reform Movements in Colonial India
- (b) Nationalism & Women with emphasis on Gandhian Phase
- (c) Women in Public & Private sphere

Unit- 4 : **Environmental Movements**

- (a) Pre & Post Colonial Environmental Movements in India
- (b) Environmental Laws

Unit - 5 : **Economic Movements**

- (a) Green Revolution
- (b) White Revolution
- (c) Cooperative Movements in India

Suggested Readings:

1. S. C. Malik (ed.), Dissent, Protest and Reform in Indian Civilization
2. S.M. Michael, Dalits in Modern India
3. Ghanshyam Shah, Social Movements in India
4. Gail Omvedt, Dalits and the Democratic Revolution
5. Ram Chandra Guha & Madhav Gadgil, The Fissured Land
6. Richard H Grove, Vinita Damodaran (ed.), Satpal Sangwan & Nature and the Orient
7. Y. Arnold (ed.), Nature, Culture and Imperialism
8. K. Suresh Singh, (ed.), Tribal Movements in India (2 Vols.)
9. K.K. Dutta, The Santhal Insurrection of 1831-37
10. J.C. Jha, The Kol Insurrection of Chotanagpur
11. Geraldine Forbes, Women in Modern India

12. Kuma Radha, *The History of Doing, An Illustrated Account of Movements for Women's Right and Feminism in India 1800-1900*, Delhi, 1993
13. Minault Gail, *Secluded Scholars, Women's Education and Muslim Social Reform in Colonial India (OUP)*, Delhi, 1998
14. Sangari, Kumkum and Sudesh Vaid (eds.), *Recasting Women, Essays in Colonial History (Kali for Women, Delhi, 1989)*.
15. Kamla Bhasin, *Understanding Gender*
16. Saberval, V.K. Etal (ed.), *Battles Over Nature, Delhi, Permanent Black, 2003*
17. Mamta Kalia, *स्वभाव से रहित स्वभाव*
18. Prabha Khetan, *स्वभाव से रहित स्वभाव से रहित*
19. Dr. Sudha Balkrishnan, *स्वभाव से रहित स्वभाव से रहित*
20. Anamika, *स्वभाव से रहित स्वभाव से रहित*
21. Kamla Prasad (ed.), *स्वभाव से रहित स्वभाव से रहित*
22. Radha Kumari, *स्वभाव से रहित स्वभाव से रहित (1800-1900)*

HISTORY OF EXPRESSIONS ELECTIVE COURSE (EC)- 2

- Unit- 1 : **Indian Theatre**
(a) Growth of Indian theatre in the colonial period
(b) Development of Indian theatre in post 1947 period
- Unit - 2 : **Indian Cinema**
(a) Ideological & Cultural History of Indian Cinema
(b) Evolution of Indian Cinema post 1947
(c) Globalization & its impact on Indian Cinema
- Unit- 3 : **Media**
(a) Print Media in Modern & Contemporary Media
(b) Electronic Media in Modern & Contemporary Media
- Unit- 4 : **Human Rights**
(a) Concept & Definition of Human Rights UNDHR, UNCRC, CEDAW
(b) Different Generation of Human Rights
- Unit- 5 : **Disaster Management**

Suggested Readings:

1. Natrajan, History of the Indian Press
2. H. Barns, The Indian Press
3. Amit Chaudhari, (Ed.), The Picador Book of Modern Indian Literature, London, Picador, 2001
4. Rustom Bharucha, In the Name of the Secular: Contemporary Cultural Activism in India, Delhi, OUP, 1998
5. Carol A Breekenridge, Consuming Modernity, Public Culture in Contemporary India, Delhi, OUP, 1996
6. Rachel Dwyer and Christopher Pinney, Pleasure and the Nation: The History, Politics and Consumption of Public Culture in India, New Delhi, OUP, 2001
7. Peter Manuel, Cassette Culture, Popular Music and Technology in North India, Chicago, Chicago University Press, 1993
8. Purnima Mankar, Screening Culture, Viewing Politics, Television, Womanhood and Nation in Modern India, New Delhi, OUP, 2000
9. David Page and William Crawley, Satellites over South Asia, New Delhi, Sage, 2001
10. Arvind Rajagopal, Politics after Television: Hindu Nationalism and the Reshaping of the Public in India, Cambridge University Press, 2001
11. Yves Thorval, The Cinema of India, (1896-2000), New Delhi, Macmillan, 2000
12. Ravi S Vasudevan, (ed.), Making Meaning of Indian Cinema, New Delhi, OUP, 2000
13. M. Madhava Prasad, Ideology of the Hindu Film: A Historical Construction, Delhi, OUP, 1998
14. Sumita S. Chakravarty, National Identity in Indian Popular Cinema, 1947-1987, Delhi, OUP, 1996
- 15.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE)- 1 :
PUBLIC ADMINISTRATION

Unit - 1 : Introduction

- (a) Meaning, Nature & Scope
- (b) Role of Public Administration
- (c) Public Administration Vs. Private Administration

Unit- 2 : Management

- (a) Scientific Management: F W Taylor
- (b) Ecological Approach- Fred Riggs
- (c) Rational Decision Making Approaches: Herbert Simon

Unit- 3 : New Public Administration

- (a) Meaning, Nature & Importance
- (b) Impact of Globalization on Public Administration
- (c) Impact of Information Technology on Administration
- (d) E-Governance

Unit- 4 : Financial Administration

- (a) Meaning and Principles of South Budget
- (b) Performance Budget
- (c) Comptroller and Auditor General of India
- (d) Impact of Liberalization on Public Administration

Unit - 5 : Integrity in Administration in the context of Corruption; Redressal of Citizen's Grievances; Ombudsman and Lokayukta

Suggested Readings:

1. Holzer and Schwester, *Public Administration- An Introduction*, PHI
2. Nicholas Henry, *Public Administration and Public Affairs*, PHI
3. Felix A Nigro, *Modern Public Administration*, New York and Row
4. Leonard D White, *Introduction to the Study of Public Administration*, New Delhi, Eurasia Publishing House (P) Ltd.
5. S. Barker, *Administrative Theory and Public Administration*, Hutchinson University Library, London
6. Mohit Bhattacharya, *New Horizons of Public Administration*, Jawahar Publishers, New Delhi
7. M.P. Dharma and S.L. Sadana, *Public Administration in Theory and Practice*, Kitab
8. R.B. Jain, *Public Administration in India, 21st Century Challenges for Good Governance*, Deep & Deep, New Delhi

GENERIC ELECTIVE (GE) - 1 :

SOCIAL PROBLEMS IN INDIA



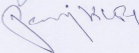
The examinee shall be required to write essays on any two topics out of four which shall be selected from the following :

1. Social Change in India
2. Poverty Alleviation Programme in India
3. Role of Civil Society in India
4. Women Empowerment and Gender Equality in India
5. Characteristics, types, causes and consequences of Casteism in India
6. Characteristics, types, causes and consequences of Communalism
7. Characteristics, types, causes and consequences of Regionalism
8. Dimension of Crime in India
9. Causes and impact of corruption in India


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B.R.A.BIHAR UNIVERSITY, MUZAFFARPUR



COURSE OF STUDY
M.A/M.Sc, MATHEMATICS
SEMESTER- I, II, III & IV
CHOICE BASED CREDIT SYSTEM (CBCS)
(To be effective from 2018-2019)

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University Professor &
Head of the Dept. of Mathematics
B.R.A.B.U., Muzaffarpur

M.A/M.Sc (Mathematics)

SCHEME OF EXAMINATION

Passing of Examination and Promotion Rule

The Post Graduate Course in Mathematics shall be of two academic sessions comprising of FOUR SEMESTERS. Each academic session shall consist of two Semesters - I & III from July to December and Semester II & IV from January to June.

Each theory paper irrespective of their nature and credits shall be of 100 marks out of which the performance of a student in each paper will be assessed on the basis of Continuous Internal Assessment (CIA) of 30 marks and the End Semester Examination (ESE) consisting of 70 marks.

The components of CIA shall be

- | | |
|--|----------|
| (a) Two Mid Semester Written Tests of one hour duration each | 15 Marks |
| (b) Seminar/quiz | 5 Marks |
| (c) Assignment | 5 Marks |
| (d) Punctuality & Conduct | 5 Marks |

Total 30 Marks

1. There shall be no supplementary examination in any of the Semester Course (I, II, III & IV).
2. A student who has appeared at the CIA and attended the required minimum percentage (75%) of the attendance in theory shall be permitted to appear in the End Semester Examination (ESE).
3. To be declared passed in ESE in any subject, a students must secure at least 45% marks in each paper separately.

A student has to secure minimum 45% marks in CIA of any paper. In case, a student fails to secure minimum 50% marks in CIA of any paper, he/she will be declared fail in that paper. Students shall have to reappear in that paper and in CIA examination also in the same semester of next academic session.

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26/5/19

Prakash
26-5-19

Prakash
26/5/19
University Professor &
Head of the Dept. of Mathematics
B.R.A.U., Meerapur

Syllabus of M.A/M.Sc (Mathematics) Semester I

PAPER I (MAT CC 01)

Abstract Algebra

Abstract Algebra

Prerequisites: Introduction to Group, Elementary Properties of Group, Finite Group, and subgroup, Cyclic Group, Permutation Group, Properties of Permutations, rings, Integral Domains, Characteristics of rings.

Unit 1 : Homomorphism; Group actions, Sylow theorems, Normal and subnormal series composition series of a group. Jordan-Hölder Theorem, Solvable groups, commutator subgroup of a group, Nilpotent groups.

Unit 2 : Ring homomorphism, isomorphism, quotient rings, ideals, Kernel of ring homomorphism, principal ideal ring and domain, prime and maximal ideal, Euclidean domain.

Unit 3 : Extension fields, algebraic and transcendental extension, splitting field of Polynomial, separable and inseparable extension, normal extension, constructible real numbers.

Unit 4 : Cyclic Modules, simple Modules, semi-simple Modules, Schur's Lemma, Free Modules.

Unit 5 : Solution of equations by radicals, insolubility of equations of degree 5 by radicals.

References :

1. I. N. Herstein \rightarrow Topics in Algebra.
2. M. Artin \rightarrow Algebra
3. L. S. Luthar & I. B. S. Passi \rightarrow Algebra Vols I & II Narosa Publication House
4. D.S. Dummit and R.M. Foote \rightarrow Abstract Algebra
5. N.S. Gopalakrishnan \rightarrow University Algebra

BK Singh
26/5/19

Sylow Assign
26/5/19

Prof. J. S. Srinivas
26/5/19
University Professor &
Head of the Dept. of Mathematics
S.R.A.B.U., Mysuru

PAPER II (MAT CC- 02)

Real Analysis

Real Analysis

- Unit 1 :** Sequences and series of functions, pointwise and uniform convergence, Cauchy criterion for uniform convergence, Weierstrass-M test, Abel's and Dirichlet's test for uniform convergence.
- Unit 2 :** Uniform convergence and differentiation, Weierstrass approximation theorem
Power series, Uniqueness theorem for power series, Abie's and Tauber's theorem.
- Unit 3 :** Definition and examples of Riemann-Stielje's integral Property of integral,
Integration and differentiation, the fundamental theorem of Calculus, Integration
Of vector valued function, rectifiable curves.
- Unit 4 :** Functions of several variables, linear transformation, Derivatives in an open subset
of R^n , chain rule, partial derivatives, interchange of order of differentiation, derivatives
of higher orders, Taylor's theorem.
- Unit 5 :** Inverse function theorem, Implicit function theorem, Jacobians, Extremum
Problems with constraints, Lagrange's multiplier methods, differentiation of
Integrals, partition of unity, Differential forms, Stoke's theorem.

References :

1. W. Rudin \rightarrow Principles of Mathematical Analysis
2. T. M. Apostol \rightarrow Mathematical Analysis
3. I.P. Natanson \rightarrow Theory of function of Real Variable
4. H.L. Royden \rightarrow Real Analysis

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PAPER III (MAT CC-03)

Linear Algebra

Linear Algebra

- Unit 1 :** Finite dimensional vector spaces; Linear transformations and their matrix representations, rank; systems of linear equations, eigenvalues and eigenvectors, minimal polynomial, Cayley-Hamilton Theorem, diagonalization.
- Unit 2 :** Hermitian, Skew Hermitian and unitary matrices; Finite dimensional inner product space, Gram-Schmidt orthonormalization process, self-adjoint operators.
- Unit 3 :** Similarity of linear transformations, Invariant subspaces, reduction to triangular forms, Nilpotent transformations, Index of Nilpotency, invariants of a Nilpotent transformations, primary decomposition theorem, Jordan blocks and Jordan forms rational canonical form.
- Unit 4 :** Bilinear form, algebra of bilinear form Matrix of bilinear forms, degenerate and Non-degenerate bilinear forms, Alternating bilinear forms
- Unit 5 :** Symmetric and Skew-symmetric bilinear forms, Quadratic form, law of Inertia, Sylvester's theorem, Hermitian forms.

References :

1. K.B.Datta:- Matrix and Linear Algebra
2. S. Lipschutz:- Linear Algebra, Schaum's outline series
3. Hoffman and Kunze:- Linear Algebra

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PAPER IV (MAT CC-04)

Discrete Mathematics

Discrete Mathematics

Set Theory:

Unit 1 : Elementary set theory. Finite, countable and uncountable sets, Real number system as a complete ordered field. Archimedean property, supremum, infimum. Schroeder-Bernstein's theorem, Zorn's lemma, Well-ordering theorem.

Lattice Theory

Unit 2 : Lattices as partially ordered sets and their properties, lattices as algebraic system, Sub lattices, direct products and Homomorphisms of Lattices some special lattices eg Complete lattices, complemented lattices and distributive lattices.

Boolean Algebra

Unit 3 : Boolean algebra as a complemented distributive lattice, Boolean rings, identification of Boolean algebra and Boolean rings, sub-algebra and generators.

Unit 4 : Boolean homomorphism and ring homomorphism ideals in a Boolean algebra and Dual Ideals, Fundamental theorem of homomorphism and Stone's representation theorem for Boolean algebras and Boolean rings, simple application to electrical network, solvability of Boolean equations and logical puzzles.

Combinatorics

Unit 5 : Permutation and combinations, partitions, pigeonhole principle, inclusion-exclusion principle, generating functions, recurrence relations.

References :

1. K.H. Rosen :- Discrete Mathematics and its applications.
2. S.Lipschutz and M.Lipson:- Discrete Mathematics
3. C. L. Liu:- Elements of Discrete Mathematics.
4. E.Mendelson :- Boolean Algebra and Switching Circuits
5. Kolman, Bushi and Ross :- Discrete Mathematical Structure.

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Syllabus of M.A/M.Sc (Mathematics) Semester II

PAPER V (MAT CC 05)

General Advanced Mathematics

Integral Transforms:

Unit I : Laplace transform, Definition of e^x , e^{ax} , $\sin ax$, $\cos ax$, Convolution theorem, Application of Linear differential equations with constant coefficients. Fourier transform, Fourier Integral theorem, Fourier sine and cosine transforms.

Fuzzy Set Theory:

Unit II: Fuzzy Sets Versus Crisp sets, Basic definitions, types, properties and representations of Fuzzy sets, Convex Fuzzy sets, Basic operation on Fuzzy set, α -Cuts, Decomposition theorem, Complements, t -norm and t -conorms, Extension principles and Simple applications of Fuzzy sets.

Graph Theory

Unit III : Definition of graphs, paths, circuits and subgraphs, induced subgraphs, degree of a vertex, connectivity, planar graphs and their properties, Trees and simple applications of graphs.

Number Theory

Unit IV : Divisibility Theory in the Integers: Division Algorithm, the Greatest Common Division. The Euclidean Algorithm, The Diophantine Equations $ax + by = c$, Fundamental Theorem of Arithmetic.

References:

1. Kolman, Bushi and Ross:- Discrete Mathematical Structure.
2. Pundir And Pundir:- Fuzzy Sets & their Application,
3. G.J.Kir & B. Yuan :- Fuzzy sets.
4. Graph Theory: F. Harary, Addison Wesley.
5. A. Baker, A concise introduction to the Theory of Numbers.

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PAPER VI (MAT CC 06)

Complex Analysis

Complex Analysis

Unit 1 : Algebra of complex numbers, the complex plane, polynomials, power series, transcendental functions such as exponential, trigonometric and hyperbolic functions. Analytic functions, Cauchy-Riemann equations.

Unit 2 : Contour integral, Cauchy's theorem, Cauchy's integral formula, Liouville's theorem.

Unit 3 : Taylor's theorem, Maximum modulus Principle, Schwarz's Lemma, Laurent Series, Isolated singularities, Meromorphic function, Mittag-Leffler's theorem The argument principle, Rouché's theorem, power series.

Unit 4 : Residues, Cauchy's residue theorem, Evaluation of integral, Branches of many valued functions with special reference to $\arg z$, $\log z$ and z^n , Bilinear transformations, their properties and classifications, definition and examples of conformal mappings. Möbius Transformations.

References :

1. J.B. Conway :- Functions of one Complex Variables,
2. L.V. Ahlfors :- Complex Analysis

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PAPER VII (MAT CC-07)

Differential and Integral Equations

Differential and Integral Equations

Unit 1 : Initial Value problem and the equivalent integral equation, n order equation in d dimension as a first order system. Concepts of local existence, existence in the large and uniqueness of solution with examples.

Unit 2 : Integral Equations and their classifications. Eigen values and eigen functions. Fredholm Integral equations of Second Kind, Iterative Scheme and method of successive approximations.

Unit 3 : Ascoli- Arzela theorem, a theorem on convergence of solutions of a family of Initial value problems. Picard- Lindelof theorem, Peano's existence theorem. Corollaries, Kamke's convergence theorem.

Unit 4 : Gronwall's inequality, maximal and minimal solution, Differential Inequalities, Uniqueness theorem, Nagumo's and Osgood's criteria, successive approximations.

References :

1. P. Hartman -> Ordinary Differential Equation
2. S.G.Mikhlin -> Linear Integral Equations.
3. R.P.Karwal -> Linear Integral Equations, Theory and Techniques.

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PAPER VIII (MAT CC-08)

Measure Theory

Measure Theory

- Unit 1 :** Lebesgue outer measure, Measurable sets, Measurability, Measurable functions, Borel and Lebesgue measurability, non-measurable sets.
- Unit 2 :** Integration of non-negative functions, the general integral, Integration of series, Riemann and Lebesgue integrals.
- Unit 3 :** The Four Derivatives, function of bounded variation, Lebesgue differentiation Theorems, Differentiation and Integration.
- Unit 4 :** Measure and outer measure, extension of measures, uniqueness of extension, Completion of a measure, measurable spaces, integration with respect to a measure.
- Unit 5 :** The L^p -spaces, convex functions, Jensen inequality, Holder's and Minkowski's Inequalities, completeness of L^p -spaces, convergence in measure, Almost uniform Convergence.

References:

1. G.de Barra -> Measure Theory and Integration
2. P.K. Jain and V.P Gupta :- Lebesgue Measure and Integration
3. I.K. Rana -> An Introduction to Measure and Integration
4. P.R. Halmos- Measure Theory.

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PAPER IX (MAT CC-09)

Topology

- Unit 1 :** Definition and examples of topological spaces, closed sets, dense subsets, Neighbourhood, interior, exterior, boundary and accumulation points. Derived Sets, Bases and subbases. Subspaces and Relative topology.
- Unit 2 :** Continuous functions and homeomorphisms, characterisation of continuity in Terms of open sets, closed sets, basic open sets, sub- basic open sets and closure. First and second countable topological spaces Lindelof's theorem, separable Spaces, second countability and separability.
- Unit 3 :** Separation axioms T_0 , T_1 and T_2 and their basic properties, compactness, Continuous function and compact sets, basic properties of compactness and Finite Intersection property.
- Unit 4 :** Connectedness, continuous function and connected sets characterization of Connectedness in terms of a discrete two point space connectedness on real line.
- Unit 5 :** Regular and Normal spaces T_3 and T_4 spaces, characterisations and basic properties, Urysohn's lemma and Tietze extension Theorems.

References:

1. G.F. Simmons :- Introduction to Topology and Modern Analysis
2. K.K.Bha :- Functional Analysis, Advanced General Topology
3. Fulton:- Algebraic Topology First Course

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PAPER X (MAT CC-10)

Number Theory

Number Theory

- Unit 1 :** Divisibility, G.C.D. and L.C.M., Primes, Fermat numbers, congruences and residues, theorems of Euler, Fermat and Wilson, solutions of congruences, linear congruences, Chinese remainder theorem.
- Unit 2 :** Arithmetical functions $\phi(n)$, $\mu(n)$ and $d(n)$ and $\sigma(n)$, Moebius inversion formula, congruences of higher degree, congruences of prime power moduli and prime modulus, power residues.
- Unit 3 :** Quadratic residue, Legendre symbols, lemma of Gauss and reciprocity law, Jacobi symbols, Farey series, rational approximation, Hurwitz theorem, irrational numbers, irrationality of e and π , Representation of the real numbers by decimals.
- Unit 4 :** Finite continued fractions, simple continued fractions, infinite simple continued fractions, periodic continued fractions, approximation by convergence, best possible approximation, Pell's equations, Lagrange four square theorem.

References:

1. Theory of Numbers, G.H. Hardy and E.M. Wright, Oxford Science Publications, 2003.
2. Introduction to the Theory of Numbers, I. Niven and H.S. Zuckerman, John Wiley & Sons, 1960.
3. Elementary Number Theory, D.M. Burton, Tata McGraw Hill Publishing House, 2006.
4. Higher Arithmetic, H. Davenport, Cambridge University Press, 1999.
5. Introduction to Analytic Number Theory, T.M. Apostol, Narosa Publishing House.

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Syllabus of M.A/M.Sc (Mathematics) Semester III

PAPER XI (MAT CC-11)

Functional Analysis

Functional Analysis

- Unit 1 :** Normed linear spaces, Banach spaces and examples, Quotient space of normed linear Spaces and its completeness, equivalent norms, Riesz Lemma, Basic properties of finite dimensional normed linear spaces and compactness.
- Unit 2 :** Weak convergence and bounded linear transformation, normed linear spaces of bounded linear transformations, dual spaces with examples, uniform boundedness theorem and some of its consequences.
- Unit 3 :** Open mapping theorem and closed graph theorem, Hahn- Banach Theorem on real linear spaces, complex linear spaces and normed linear spaces, Reflexive spaces.
- Unit 4 :** Inner product spaces, Riesz lemma on Hilbert space, orthonormal sets and Parseval's identity, structure of Hilbert spaces, Projection theorem Riesz Representation Theorem.
- Unit 5 :** Adjoint of an operator on a Hilbert space, Reflexivity of Hilbert spaces, Self-adjoint Operators, positive operator, Projection, Normal and unitary operators.

References

1. G.F.Simmons:- Introduction to Topology and Modern Analysis
2. K.K.Jha :- Functional Analysis, Advanced General Topology

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PAPER XII (MAT CC-12)

Fluid Dynamics

Fluid Mechanics

- Unit 1 : Lagrangian and Eulerian methods, Equation of Continuity, Boundary Surfaces, Stream lines, Path lines and Streak lines, velocity potential, irrotational and rotational motions, vortex lines.
- Unit 2 : Lagrange's and Euler's equations of motion, Bernoulli's theorem, equation of motion by flux method, equation referred to moving axis, impulsive actions.
- Unit 3 : Irrotational Motion in two dimension, stream function, complex velocity potential, sources, sinks, doublets and their images, conformal mapping, Milne-Thompson circle theorem.
- Unit 4 : Two dimensional irrotational motion produced by motion of a circular, coaxial and elliptic cylinders in an infinite mass of liquid, kinetic energy of a liquid, Theorem of Blasius, motion of a sphere through a liquid at rest at infinity, liquid streaming past a fixed sphere, Equation of motion of a sphere, Stoke's stream function
- Unit 5 : Vortex motion and its elementary properties, Kelvin's proof of permanence, Motion due to circular and rectilinear vortices.

References

1. F.Chorlton :- A text Book of Fluid Dynamics.
2. M.D. Raisinghan:- Fluid Dynamics

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PAPER XIII (MAT CC-13)

Classical Mechanics (Rigid Dynamics)

Unit 1 : Generalised Co-ordinates, Holonomic and Non Holonomic systems, Lagrange's equations of motion, energy equations for conservative fields.

Unit 2 : Hamilton's canonical equations, Rouths equations, Hamilton's Principle, Principle of Least Action.

Unit 3 : Small Oscillations, normal Co-ordinates, normal mode of vibration.

Unit 4 : Contact transformations, Lagrange brackets and Poisson brackets, the most general infinitesimal contact transformation, Hamilton-Jacobi equation.

Unit 5 : Motivating problem of Calculus of variation, Euler-Lagrange equation shortest distance, minimum surfaces of revolution, Brachistochrone problem.

References

1. A.S. Ramsey :- Dynamics Part II
2. S.L. Loney :- Dynamics of particle and rigid bodies

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PAPER XIV (MAT CC-14)

Optimization Techniques

Linear Programming

Unit 1 : Simplex method for unrestricted variable, Two phase method, Dual simplex method,

Parametric Linear programming, Upper Bound technique, Interior point algorithm,

Linear Goal programming.

Unit 2 : Integer programming, Branch and bound technique, Gomory's algorithm.

Non- Linear programming:

Unit 3 : One and multi-variable unconstrained optimization, Kuhn- Tucker condition for constrained optimization, Wolfe's and Beale's methods.

Unit 4 : Game theory, Two person- Zero sum games with mixed strategies, Graphical solution by expressing as a linear programming problem.

Unit 5 : Inventory theory, Different costs of inventory model, Deterministic Economic lot size model, EOQ with uniform demand and several productions of unequal length / production runs of equal length EOQ models- Shortages not allowed, shortages allowed.

References

1. H.A.Taha :- Operations Research- An Introduction
2. Kanti Swarup, P.K.Gupta and Man Mohan: Operations Research
3. P.K.Gupta and D.S. Hira :- Operations Research- An Introduction

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PAPER XV (MAT CC-15)

Differential Geometry

Unit 1 : Curves in R^3 spaces, parameters other than arc lengths, tangent principal normal, binormal and three fundamental planes, Curvature and torsion of space curves, Serret- Frenet formulae, Fundamental theorem on space curves, Helices, spherical indicatrix, involutes and Evolutes, Bertrand curves.

Unit 2 : Representation of surfaces, Curves on surfaces in R^3 spaces, tangent plane and Normal, Envelope, characteristic and edge of regression, developable surface of revolution, directions on a surface.

Unit 3 : Parametric curves, angle between them, first order and second order magnitudes, principal directions and lines of curvature, Normal Curvature, Euler's theorem and Meunier's theorem. Theorem of Beltrami and Enneper, Gauss Characteristic equation, Mainardi-Codazzi equations.

Unit 4 : Conjugate directions, Isometric lines, asymptotic lines and Geodesics- their equations and properties, curvature and torsion, their structures on surfaces of revolution, Bonnet's theorem, Clairaut's theorem and Dupin's indicatrix.

References

1. C.E. Weatherburn:- Differential Geometry In Three Dimension
2. J.A. Thorpe :- Elementary Topics in Differential Geometry.
3. A.Gay: Differential Geometry of three dimensions, Cambridge University Press

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List of Elective Paper (MAT EC-01 & MAT EC-02)

- 1. Fuzzy sets and their application**
- 2. Mathematical Methods**
- 3. Operational Research**
- 4. Theory of Relativity**
- 5. Galois Theory.**
- 6. Advanced Topology**
- 7. Banach Algebras**
- 8. Commutative Algebra**
- 9. Programming in C**

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1. Fuzzy set and their applications

Fuzzy Set Theory:

Unit 1 : Fuzzy Sets Versus Crisp sets, Basic definitions, types, properties and representations of Fuzzy sets, Convex Fuzzy sets, Basics operation on Fuzzy set, α - Cuts, Decompositions theorem, Complements, t - norm and t -conorms, Extension principles and Simple applications of Fuzzy sets.

Unit 2 : Fuzzy logics – An overview of classical logic, Multivalued logics, Fuzzy propositions, fuzzy quantifiers, Linguistic variable and hedges, inference from conditional fuzzy propositions the compositional rule of inference.

Unit 3 : Approximate Reasoning – An overview of fuzzy expert system, Fuzzy implication and their selection Multiconditional approximate reasoning the role of fuzzy relation equation.

Unit 4 : An introduction to Fuzzy control – Fuzzy controllers, Fuzzy rule base Fuzzy inference engine Fuzzification, Defuzzification and the various defuzzification method (The centre of maxima and the mean of maxima methods).

Unit 5 : Decision making in Fuzzy Environment – Individual decision making, Multiperson decision making, Multicriteria decision making, Multistage decision making, Fuzzy ranking methods, Fuzzy linear programming.

Unit 6 : Misc Application specially in social science, Biological Science and engineering reliability theory and mathematical statistics.

References :

1. G.J.Klir & B. Yuan :- Fuzzy sets and Fuzzy Logics.
2. H.J.Zimmermann, Fuzzy set theory and its Applications.
3. G.J.Klir and T.A.Folger:- Fuzzy Sets, Uncertainty and Information.
4. Pundir And Pundir:- Fuzzy Sets & their Application,

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2. Mathematical Methods

- Unit 1 :** Orthogonalisation, Bessel's Inequality, Mean error minimization, completeness relation, Weierstrass approximation theorem, polynomials of Legendre, Hermite and Bessel, generating function, orthogonality, recurrence relation and Rodrigue's formula
- Unit 2 :** Partial Differential Equation and properties, concept of well posed problems, Reduction of P.D.E in two independent variables to the canonical forms, classification in to elliptic, hyperbolic and parabolic equations, Laplace's equations in cartesian, cylindrical and spherical co-ordinates, Equipotential surfaces, Interior and exterior Dirichlet problem, the Maximum- Minimum property, solutions and Uniqueness, Dirichlet's problem for a circle, fundamental properties of Harmonic function.
- Unit 3 :** Wave equation in one dimension and two dimension, vibrations of struck and plucked string with fixed ends, homogeneous rectangular and circular membranes, eigen vibrations, D'Alembert's solution of one dimensional wave equation. One dimensional Diffusion equation & solution of initial value problem by integral transform .
- Unit 4 :** Tensors- Transformations of Co-ordinates, contravariant and covariant vectors Symmetric and skew-symmetric tensors, addition and multiplication of tensors, Contraction and composition of tensors, Quotient law.
- Unit 5 :** Reciprocal symmetric tensors of the second order, Christoffel's symbols, covariant derivative of a contravariant vector, Co-variant derivative of a covariant vector, covariant derivatives of tensors, curl of a vector, Divergence of a covariant vector, Laplacian of a scalar invariant.

References

1. I. N. Sneddon- Elements of Partial Differential Equations
2. R. Courant and D. Hilbert:- Methods of Mathematical Physics Vol I & Vol II
3. C.E. Weatherburn : - Riemannian Geometry and Tensor calculus
4. Smimov and Tychonoff : - Partial Differential Equations.

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3. Operations Research

- Unit 1:** Queuing Theory- Poisson probability law, Distribution of inter-arrival time, Distribution of time between successive arrivals, Differential difference equation of $M/M/1: \infty$ FIFO, $M/M/1: N$ FIFO, $M/M/C: \infty$ FIFO, $M/M/C: N$ FIFO,
- Unit 2:** Information Theory: Description of communication system, Mathematical definition of information, Axiomatic approach to information, Measures of uncertainty, Entropy In two dimensions- property, conditional entropy.
- Unit 3:** Channel capacity, Efficiency and redundancy, Encoding, Fano-encoding procedure, Necessary and sufficient condition, average length of encoded message.
- Unit 4:** Replacement Model- introduction concepts of present value, replacement of items whose maintenance cost increase with time and value of money also changes, Replacement of items that fail completely, individual and group replacement policy.
- Unit 5:** Sequencing - N jobs and 2 machines, N jobs and 3 machines, N jobs M machines.

References

1. H.A. Taha- Operations Research - An Introduction
2. Kanti Swarup, P.K.Gupta and Man Mohan: Operations Research
3. P.K.Gupta and D.S. Hira- Operations Research.

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4. Theory of Relativity

- Unit 1 :** General Theory of Relativity- Principle of equivalent and general covariance, Einstein field equations and its Newtonian approximation.
- Unit 2 :** Schwarz- Schild external solution and its isotropic form, Birkhoff theorem, planetary orbits and analogues of Kepler's laws in general relativity.
- Unit 3 :** Advance of perihelion of a planet, Bending of light rays in a gravitational field, Gravitational shift of spectral lines, Einstein theory.
- Unit 4 :** Energy Momentum of tensor of a perfect fluid, Schwarz- Schild internal solution, Energy Momentum tensor of an electromagnetic field, Einstein Maxwell equation, Reissner-Nordstrom Solution.
- Unit 5 :** Cosmology - Einstein modified field equation with cosmological term static cosmological models of Einstein and De-Sitter, their derivation properties and comparison with the actual universe.

References:

1. C.E. Weatherburn: An Introduction to Riemannian Geometry and the tensor calculus.
2. A.D.Eddington: The Mathematical theory of Relativity.
3. Goyal and Gupta:- Theory of Relativity
4. R.Adler, M.Bazin, M.Schiffer:- Introduction to General Relativity.
5. J.J.Syng:- Special theory of Relativity & General theory of Relativity.

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5. Galois Theory

Unit 1 : Rings, examples of rings, ideals, prime and maximal ideals. Integral domains, Euclidean Domains, Principal Ideal Domains and Unique Factorizations Domains. Polynomial rings over UFD's.

Unit 2 : Fields, Characteristic and prime subfields, field extensions, finite, algebraic and finitely generated field extensions, algebraic closures.

Unit 3 : Splitting fields, normal extension, Multiple roots, Finite fields, separable Extension.

Unit 4 : Galois group, Fundamental Theorem of Galois Theory, Solvability by radicals, Galois theorem on solvability. Cyclic and abelian extensions. Classical ruler and Compass constructions.

References:

1. D.S. Dummit and R.M. Foote, Abstract Algebra
2. Joseph Rotman, Galois Theory
3. N.Jacobson, Basic Algebra I, IInd ed, Hindustan Publishing Co. 1984.
4. S.Lang, Algebra, III Edition, Addison Wesley, 2005.

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6. Advance Topology

- Unit 1 : Countably compact spaces, sequentially compact spaces, totally bounded metric spaces.
- Unit 2 : Lebesgue's covering lemma, spaces of continuous functions, Arzela-Ascoli Theorem, Weierstrass's approximation theorem.
- Unit 3 : Stone Weierstrass's theorem, metrizable spaces and metrization theorems, uniform spaces, topology of uniform spaces.
- Unit 4 : Uniform continuity, uniform metrizable topological spaces, metrizable uniform spaces.
- Unit 5 : Some properties of completely regular spaces, the Stone-Čech compactification.

References:

1. S.Willard: General Topology, Addison - Wesley 1970.
2. S.W.Davis: Topology, TMH 2006.
3. K.K.Ira: Advanced General Topology, Nav Bharat Prakashan, Patna.
4. G.F.Simmons: An Introduction to Topology and Modern analysis.

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7. Banach Algebras

- Unit 1 :** Elementary properties and Examples of Banach Algebras, Ideal quotients, the spectrum of an element, dependence of spectrum on algebra, Abelian Banach Algebras.
- Unit 2 :** Elementary properties of C^* -Algebras and examples, Abelian Algebras and functional calculus, positive elements.
- Unit 3 :** Ideals and quotients, representations of C^* -Algebras and the Gelfand-Naimark construction.
- Unit 4 :** Spectral measures and representations of Abelian C^* -Algebras, Special theorem.
- Unit 5 :** Topologies on $B(H)$, the double commutant theorem and Abelian Von-Neumann Algebras.

References:

1. J.B.Conway: A course in Functional Analysis, Springer 1990.
2. R.V.Kadison and J.R.Ringrose: Fundamentals of the theory of Operator Algebras, AMS 1997.
3. G.Murphy: C^* -Algebras and Operator theory, Academic Press 1990.

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8. Commutative Algebra

Unit 1 : Ring and ring homomorphisms, ideals, quotient rings, Zero divisors, Nilpotent elements units, prime ideals and maximal ideals, Nil Radical and Jacobson Radical, Operations on ideals, extension and contraction.

Unit 2 : Modules and module homomorphisms, sub-modules, quotient modules. Operations on sub-modules, Direct sum and products, Finitely generated modules, exact sequences.

Unit 3 : Tensor product of modules, restriction and extension of scalars, exactness properties of tensor product, Algebras, Tensor product of algebras.

Unit 4 : Local properties, extended and contracted ideals in ring of fractions, primary decompositions, integral dependence, the going-up theorem, integrally closed integral domains, the going-down theorem, chain conditions.

Unit 5 : Primary decompositions in Noetherian ring, Artin rings, discrete valuation rings, Dedekind domains, Fractional ideals.

References:

1. M.F. Atiyah and I.G. Macdonald: Introduction to Commutative Algebra- Addison-Wesley.
2. H.Matsumura: Commutative ring theory, Camb. Univ. Press
3. N.S.Gopala Krishnan- Commutative algebra
4. S.Lang: Algebra, Springer
5. D.P.Patil, Patil, Storck: Introduction to Algebraic Geometry and Commutative Algebra, Anshan Publishers.

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9. Programming in C

Theory

1. Introduction to programming languages, C language and its features.
2. Understanding of Structure of Programme in C.
3. Basic data types, Library in C.
4. Operators and expression in C.
5. Functions used for input and output in C.
6. Conditional branching in C, use of If-then.
7. Looping in C, use of for loop, while loop, do-while loop, nested loops.
8. Algorithm and Flow Charts.

Practical

1. Some simple programmes use in C.
2. Leap - year.
3. Generate first n-primes
4. Roots of quadratic equations.
5. Convert a number to any given base.
6. Generate first n-perfect numbers.
7. Sine and Cosine by Taylors series.
8. Addition and multiplication of matrices
9. Transpose of a matrix.
10. Inverse of a matrix.

References:

1. Y.Karitkar: Lets C.
2. Robert Lafore: C programming.
3. E.Balaguruswami: Programming in ANSI C.

Practical
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Practical
26/3/19
University Professor 26
Head of the Dept. of Mathematics
B.P.A.S.U., Mandya

DEPARTMENT OF PHILOSOPHY
B.R.A. BIHAR UNIVERSITY, MUZAFFARPUR

SYLLABUS

FOR

M.A. IN PHILOSOPHY

Semester (Ist, IInd, IIIrd and IVth)

(CBCS - BASED)

Effective from session 2018.....onwards



UNIVERSITY DEPARTMENT OF PHILOSOPHY

B.R.A. BIHAR UNIVERSITY,

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DEPARTMENT OF PHILOSOPHY

B.R.A. BIHAR UNIVERSITY, MUZAFFARPUR

E-Mail - deptofphilosophy.brabu@gmail.com

Syllabus for M.A. in Philosophy

M.A. Semester-I

- Phil. CC - 01 : Indian Epistemology
- Phil. CC - 02 : Contemporary Indian Philosophy
- Phil. CC - 03 : Ancient Greek, Medieval & Modern Philosophy
- Phil. CC - 04 : Indian & Western Ethics
- AECC-01 : A. Environmental Sustainability (3 credits)
B. Swachha Bharat Abhiyan Activities (2 credits)

M.A. Semester-II

- Phil. CC - 05 : Western Logic
- Phil. CC - 06 : Western Epistemology
- Phil. CC - 07 : Gandhian Philosophy
- Phil. CC - 08 : Indian Metaphysics
- Phil. CC - 09 : Indian Linguistic Trends
- AEC-01 : Yogic Sciences / Computer & IT Skill / Life Skills & Skill development

M.A. Semester-III

- Phil. CC - 10 : Contemporary Western Philosophy
- Phil. CC - 11 : Western Analytical Philosophy
- Phil. CC - 12 : Indian Logic
- Phil. CC - 13 : Philosophy of Religion - I
- Phil. CC - 14 : Philosophy of Religion - II
- AECC-02 : Human Values and Professional Ethics (3 Credits)
- Phil. CC - 15 : Gender Sensitization (2 Credits)

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M.A. Semester-IV
(Student may opt. any one group of two)
Group-A

- EC- 01 (Paper-15) : Sacred Texts
1. Bhagvadgita - Radhakrishnan (3 credits)
 2. Dhammapada- Radhakrishnan (2 credits)
- EC- 02 (Paper-16) : Project Work/Dissertation

Group-B

- EC- 01 (Paper-15) : 1. Vedanta Philosophy (3 credits)
2. Sankhya Philosophy (2 credits)
- EC- 02 (Paper-16) : Project Work/Dissertation
- GE-01 : Human Rights

OR

- DSE-01 (Paper-15) : Environmental Studies

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M.A. SEMESTER-I
Phil. CC- 01

INDIAN EPISTEMOLOGY

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question & marks

- Q1. Ten Multiple Choice Questions from each unit (Compulsory) 10×1=10
Q2. Any Four Short-Answer Questions (Compulsory) 4×6=24
Q3. Any Three Long-Answer Questions 3×12=36

Internal Assessment

- (a) Two Midterm Test 2x7.5=15
(b) Seminar & Home Assignment 2x2.5=5
(c) Regularity & Conduct 10

Unit-I :

1. Definition, Nature of Cognition
2. Distinction between Prama and Aprama
3. The close relationship between Epistemology and Logic
4. Pramana Vyavastha and Pramana Samplava

Unit-II : Different Pramanas with reference to Orthodox and Heterodox systems.

1. Pratyaksha - Definition and Kinds
2. Anuman - Definition, Constituents and kinds

Unit-III :

1. Hetvabhasa
2. Upman

Unit-IV :

1. Shabda
2. Arthapatti

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Unit-V :

- 1. Anupalabdhi
- 2. Khyativada
- 3. Validity of Knowledge - Svatah Pramanyavada, Paratah Pramanyavada

SUGGESTED BOOKS

- 1. D.M. Datta - The Six Ways of Knowing
- 2. S.C. Chatterjee - The Nyaya Theory of Knowledge
- 3. B.K. Matilal - Perception
- 4. अर्थवत् प्रमाणं - अर्थवत् प्रमाणं वा नार्थवत्
- 5. अर्थवत् प्रमाणं - अर्थवत् प्रमाणं वा नार्थवत्
- 6. अर्थवत् प्रमाणं - अर्थवत् प्रमाणं वा नार्थवत्
- 7. J.N. Sinha - Indian Epistemology
- 8. अर्थवत् प्रमाणं - अर्थवत् प्रमाणं वा नार्थवत्
- 9. अर्थवत् प्रमाणं - अर्थवत् प्रमाणं वा नार्थवत्
- 10. अर्थवत् प्रमाणं - अर्थवत् प्रमाणं वा नार्थवत्
- 11. Jonardon Ganeri - Philosophy in Classical India
- 12. Stephen H. Phillips - Classical Indian Metaphysics
- 13. (Ed. By) Jonardon Ganeri - The Oxford Hand Book of Indian Philosophy

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M.A. SEMESTER-I
Phil. CC- 02
CONTEMPORARY INDIAN PHILOSOPHY

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question & marks

- | | |
|---|---------|
| Q1. Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q2. Any Four Short-Answer Questions (Compulsory) | 4×6=24 |
| Q3. Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

- | | |
|-------------------------------|----------|
| (a) Two Midterm Test | 2×7.5=15 |
| (b) Seminar & Home Assignment | 2×2.5=5 |
| (c) Regularity & Conduct | 10 |

Unit-I :

1. Vivekanand

- (a) Universal Religion
- (b) Practical Vedanta
- (c) Conception of Man

Unit-II :

1. Rabindranath Tagore

- (a) Religion of Man
- (b) The Problem of Evil

Unit-III :

1. Aurobindo

- (a) Reality of Sacchidananda
- (b) Theory of Evolution

2. S.Radhakrishnan

- (a) Concept of Absolute

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(b) Intellect and Intuition

Unit-IV :

1. B.R.Ambedkar
 - (a) Criticism of Caste system
 - (b) Social Justice
2. Iqbal
 - (a) Intellect and Intuition
 - (b) Space & Time
 - (c) Nature of Self

Unit-V :

1. K.C.Bhattacharya
 - (a) Theoretic Consciousness
 - (b) Subject as freedom
2. M.N.Roy
 - (a) Crisis of Materialism
 - (b) New Humanism

SUGGESTED BOOKS

- | | | |
|---------------------|---|---------------------------------|
| 1. Sri Aurobindo | - | Integral Yoga |
| 2. R.N.Tagore | - | Religion of Man |
| 3. B.R.Ambedkar | - | Writings and Speeches |
| 4. B.K.Lal | - | Contemporary Indian Philosophy |
| 5. V.S.Narvane | - | Modern Indian Philosophy |
| 6. R.C.Sinha | - | Concept of Reason and Intuition |
| 7. ... | - | ... |
| 8. ... | - | ... |
| 9. S.Radhakrishnan | - | An Idealist View of Life |
| 10. R.S.Shrivastava | - | Contemporary Indian Philosophy |

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11. K.C. Bhattacharya - Study in Philosophy
 12. M.N.Roy - Materialism
 13. *उत्तर दि संवेद तद विवेकत वाच - तत्रास्त्वोत्तर संवेदित विवेक*

M.A. SEMESTER-I
Phil. CC- 03

ANCIENT GREEK, MEDIEVAL & MODERN PHILOSOPHY

Time: 3 hours

Full Marks: 70

The Students are required to attempt.

No. of Question x marks

- Q1. Ten Multiple Choice Questions from each unit (Compulsory) 10x1=10
 Q2. Any Four Short-Answer Questions (Compulsory) 4x6=24
 Q3. Any Three Long-Answer Questions 3x12=36

Internal Assessment

- (a) Two Mid term Test 2x7.5=15
 (b) Seminar & Home Assignment 2x2.5=5
 (c) Regularity & Conduct 10

Unit-I :

1. General Idea of Pre-Socratic Greek Philosophy

Unit-II :

- The Contents are required to be attempted
 1. Socrates : (a) Method (b) Theory of Knowledge
 2. Plato : (a) Theory of Knowledge (b) Theory of Ideas

Unit-III :

1. Aristotle :
 (a) Criticism of Plato's Theory of Ideas
 (b) Theory of causation
 (c) Form and Matter

Unit-IV :

- St. Augustine : (a) God (b) Problem of Evil

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- 1. Descartes : (a) Mind (b) Problem of Truth
- 2. St. Aquinas : (a) God (b) Problem of Evil

Unit-V :

- 1. Nietzsche
 - (a) Superman
 - (b) Atheism
- 2. Schopenhauer :
 - (a) Pessimism
 - (b) World as will

SUGGESTED BOOKS

- 1. F.Copleston - A History of Philosophy Vol. I
- 2. J.Burnet - Early Greek Philosophy
- 3. I. M. Crombie - An Examination of Plato's Doctrines
- 4. R.H.Borrow - Introduction to St. Augustine the city of God.
- 5. Jagdish Sahay Srivastava - Greek Darshan ka Vaigyaniic Sarvekshana
- 6. R.N.Prasad Dwivedi - Paschatya Darshan : Ek Avalokana
- 7. N.P.Tiwary - Greek Evam Madhyayugin Darshan : Ek Avalokana
- 8. Daya Krishna - Paschatya Darshan Vol. - I
- 9. Kaufmann - Nietzsche
- 10. Schopenhauer - The World as will and Idea

EXERCISES : I



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- 1. Descartes : *AD 27/11/19*
- 2. St. Aquinas : *AD 28/11/19*
- 3. Nietzsche : *AD 27/11/19*
- 4. Schopenhauer : *AD 27/11/19*
- 5. Descartes : *AD 27/11/19*
- 6. St. Aquinas : *AD 27/11/19*
- 7. Nietzsche : *AD 27/11/19*
- 8. Schopenhauer : *AD 27/11/19*
- 9. Nietzsche : *AD 27/11/19*
- 10. Schopenhauer : *AD 27/11/19*

M.A. SEMESTER-I

Phil. CC- 04

INDIAN AND WESTERN ETHICS

Time: 3 hours

Full Marks: 70

The Students are required to attempt.

No. of Questions & marks

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|-----|---|---------|
| Q1. | Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q2. | Any Four Short-Answer Questions (Compulsory) | 4×6=24 |
| Q3. | Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

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|-----|---------------------------|----------|
| (a) | Two Midterm Test | 2×7.5=15 |
| (b) | Seminar & Home Assignment | 2×2.5=5 |
| (c) | Regularity & Conduct | 10 |

Unit-I :

1. Vedic conception of Rita, Rina and Yajna

2. Ethical Implication of Law of Karma, Sadhya-Sadhan Sambandha

Unit-II :

1. Ethical Concept of Gita : Loka Sangraha, Svadharma, Karma Yoga,

2. Buddhist Ethics : Brahmavihar.

Unit-III :

1. Mimansa System of Indian Philosophy : Apurva

2. Yoga Ethics : Yama and Niyama

Unit-IV :

1. A. J. Ayer : Emotivism

2. C. L. Stevenson : Emotive meaning of ethical terms

Unit-V :

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- K. K. K.** (Signature)
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1. R. M. Hare : Prescriptivism
2. G. E. Moore -
 - (a) Concept of Good
 - (b) Naturalistic fallacies
 - (c) The intrinsic and extrinsic value

SUGGESTED BOOKS

1. A.J.Ayer - Language, Truth and Logic, Dover 1948.
2. Mary Warnock - Ethics Since 1900, Oxford University Press, 1960
3. R.M.Hare - The Language of morals, Oxford University Press 1952
4. Fred Fetoman - Introduction Ethics
5. S.K.Maitra - The Ethics of the Hindus
6. I.C.Sharma - Ethical Philosophies of India
7. Suma Des Gupta - Development of Moral Philosophy
8. B.L.Arey - Bharatiya Achanshastra Ka Itihas
9. Devnath Sahay - Hindu Achanshastra
10. Diwakar Pathak - Bharatiya Nitshastra
11. C.L.Stevenson - Ethics and Language New haken Yale University Press, 1944.

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**M.A. SEMESTER-I
AECC-01**

**Ability Enhancement compulsory course
A. Environmental Sustainability (3 Credits)
B. Swachha Bharat Abhiyan Activities (2 Credits)**

Time : 3 hours

Full marks : 70

The Students are required to attempt.	No. of Question x marks
Q1. Ten Multiple Choice Questions from each unit (Compulsory)	10×1=10
Q2. Any Four Short-Answer Questions (Compulsory)	4×6=24
Q3. Any Three Long-Answer Questions	3×12=36

Internal Assessment

(a) Two Midterm Test	2×7.5=15
(b) Seminar & Home Assignment	2×2.5=5
(c) Regularity & Conduct	10

A-Unit-1 : Environmental ethics & ecosystem : Concept of sustainable development with reference to human values in Western and Indian perspective, sustainable development & conservation of natural resources (Nature, factors, structure, development and people participation) development, environment-rural and urban, concept of Ecosystem.

A-Unit-2: Development and its effect on environment : Environment Pollution - water, air, noise etc. due to Urbanisation, Industrial civilization, Concept of Global Warming, Climatic Change, Green House Effect, Acid rain, Ozone layer depletion. Menace of encroachment of exotic plants particularly parthenium and trees with special reference to impact on habit " habitat on indigenous flora & fauna.

A-Unit-3: Concept of Bio-diversity and its conservation : Environmental Degradation and conservation. Govt. Policies, Social effects and role of social reforms in this direction. Role of Science in conservation of environment concept of Three 'R' (reduce, reuse, recycle). Need of environmental education and awareness programme and ecological economics.

A-Unit-4: Swachha Bharat Abhiyan : The concept of Swachhata as personal, Gandhian approach towards social and environmental moral values & concept of swachhata and its relation to moral upgradation of society and freedom struggle. Awareness

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Programme related to Swachhata. Role of 'Swachhagrahis' in Swachha Bharat Abhiyan.

Sanitation and hygiene, why sanitation is needed, sanitation and human rights, plantation, value of nature, concept of community participation and role of state agencies. Case Study of Sanitation, effects of cleanliness, diseases - infectious and vector - born idea of spread of diseases through body and other biological fluids and excreta.

B- Unit-5: Assignment/Practical/field work based on unit-4

Or

Alternative to unit-4 and unit-5 a student can also enrol for Swachha Bharat Internship programme of MHRD.

M.A. SEMESTER-II

Phil. CC- 05

WESTERN LOGIC

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Questions & marks

Q1. Ten Multiple Choice Questions from each unit (Compulsory) 10×1=10

Q2. Any Four Short-Answer Questions (Compulsory) 4×6=24

Q3. Any Three Long-Answer Questions 3×12=36

Internal Assessment

(a) Two Midterm Test 2×7.5=15

(b) Seminar & Home Assignment 2×2.5=5

(c) Regularity & Conduct 10

Unit-I :

- Nature of Logic : Deductive, Inductive and Symbolic
- Advantages of Symbolic Logic
- Propositions and Arguments

Unit-II :

- Categorical Propositions and its four kinds according to quality and quantity
- Distribution of Terms

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3. Square of Opposition

Unit-III :

1. Immediate Inference - conversion and obversion
2. Figures - Four figures
3. Syllogistic rules and fallacies

Unit-IV :

1. Truth and Validity
2. \vee Contradictory, Tautology, Contingent & Equivalency by using truth-table -
Characterization
3. Determination of Truth value by using Truth Table Method.
4. Validity and Invalidity of argument by Truth-Table Method.

Unit-V :

1. Formal proof of validity
2. Proving Invalidity : by the Method of Assigning truth-values.
3. Conditional Proof and indirect proof.

SUGGESTED BOOKS

1. Symbolic Logic - I.M. Copi 4th edition
2. An Introduction to logic - Copi and Cohen 9th Edition
3. An Introduction to Logic - Copi and Cohen Jettl and Prabhakar 12th Edition
4. Deductive Logic - B.N.Roy
5. Immediate inference - *Arshad Hussain*
6. Immediate inference - *Arshad Hussain*
7. Immediate inference - *Arshad Hussain*

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1. Apriori Knowledge
2. Aposteriori Knowledge
3. Distinction between Analytic and Synthetic Judgement

SUGGESTED BOOKS

- | | | | |
|----|---------------|---|---|
| 1. | K. Lehren | - | Knowledge |
| 2. | R.M. Chisholm | - | Theory of Knowledge 3 rd Ed. |
| 3. | A.J. Ayer | - | The Problem of Knowledge |
| 4. | B. Russell | - | Human Knowledge : Its Scope and Limits |
| 5. | A.C. Danto | - | Analytical Philosophy of Knowledge |
| 6. | P.F. Strawson | - | Skepticism and Naturalism same Varieties. |
| 7. | डॉ. अ. वा. | - | ब्रह्मसूत्र भाष्य |
| 8. | डॉ. वि. वा. | - | ब्रह्मसूत्र भाष्य |

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M.A. SEMESTER-II
Phil. CC- 07
GANDHIAN PHILOSOPHY

Time : 3 hours

Full marks : 70

The Students are required to attempt

No. of Question x marks

- | | | |
|------|---|---------|
| Q1. | Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q.2. | Any Four Short-Answer Questions (Compulsory) | 4×6=24 |
| Q.3. | Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

- | | | |
|-----|---------------------------|----------|
| (a) | Two Midterm Test | 2x7.5=15 |
| (b) | Seminar & Home Assignment | 2x2.5=5 |
| (c) | Regularity & Conduct | 10 |

Unit-I :

1. Truth and God
2. Non-Violence

Unit-II :

1. Cardinal Virtues
2. Ends and Means

Unit-III :

1. Swadeshi
2. Education

Unit-IV :

1. Trusteeship
2. Sarvodaya

Unit-V :

1. Satyagraha

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2. Religion

SUGGESTED BOOKS

1. M.K.Gandhi - My Experiment with Truth
2. M.K.Gandhi - Hind Swaraj
3. M.K.Gandhi - Removal of Untouchability
4. M.K.Gandhi - Women and Social Justice
5. S.S.Patil - Gandhi and Swaraj
6. Romain Rolland - Mahatma Gandhi
7. S.Radhakrishnan - Mahatma Gandhi, Hundred Years
8. B.C.Pal - Swadeshi and Swaraj
9. N.K.Basu - Selections from Gandhi
10. Margaret Chatterjee - Gandhian Religions Thought
11. D.M.Datta - The Philosophy of Mahatma Gandhi
12. Homer A. Jack - Religion and peace
13. Rangnath Prasad - Gandhi Darshan Vishwa Shanti Ki ore.
14. Ramji Singh - Gandhi Mimansa

7. S Radhakrishnan

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13. Rangnath Prasad
14. Ramji Singh

M.A. SEMESTER-II
Phil. CC- 08
INDIAN METAPHYSICS

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question & marks

- | | |
|---|---------|
| Q1. Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q2. Any Four Short-Answer Questions (Compulsory) | 4×6=24 |
| Q3. Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

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|-------------------------------|----------|
| (a) Two Midterm Test | 2×7.5=15 |
| (b) Seminar & Home Assignment | 2×2.5=5 |
| (c) Regularity & Conduct | 10 |

Unit-I :

1. Padartha (Vaisheshika)

Unit-II :

1. Brahman (Upanishad, Shankar and Ramanuja)

Unit-III :

1. Conception of God (Nyaya and Yoga)

Unit-IV :

1. Conception of Jiva and Purusha (Jain & Samkhya)

Unit-V :

1. Conception of World (Shankar & Ramanuja)

SUGGESTED BOOKS

- | | | |
|----------------------|---|--|
| 1. J.N.Sinha | - | Indian Philosophy |
| 2. P.K.Mukhopadhyaya | - | Indian Realism |
| 3. B.N.Singh | - | Bhartiya Darshan |
| 4. H.P.Singh | - | Bhartiya Darshan ki Ruprekha |
| 5. C.D.Sharma | - | A Critical Survey of Indian Philosophy |

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Unit-IV :

1. Avachhedakavada
2. 'Conception of Negation

Unit-V :

1. Apohavada
2. Meaning and Kinds of Abhava

SUGGESTED BOOKS

1. K.N.Chatterjee - Word and meaning- A new perspective Varanasi-1980
2. Gaurinath Sastri - The Philosophy of Word meaning, Calcutta-1959
3. K.Kunjnni Raja - Indian Theories (Meaning Adyer 1977)
4. K.A.Subramanialayer- Bhartrihari, Poona, 1959
5. Tandra Patnak - Sabda : A Study of Bhartrihari's Philosophy of Language De 1994
6. Naresh Pd. Tiwari - Bhartiya Bhasha Darshan
7. Satyapal Guatam - Bhasha Darshan
8. Bijay Pal Shashtri - Bhartiya Bhasha Darshan
9. V.N.Ojha - Logic, Epistemology and Language.
10. Hari Mohan Jha - Trends of Linguistic Analysis in Indian Philosophy

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M.A. SEMESTER-II

AEC- 01

Ability Enhancement Course

Yogic Sciences

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question x marks

- | | |
|---|---------|
| Q1. Ten Multiple Choice Questions from each unit (Compulsory) | 10x1=10 |
| Q2. Any Four Short-Answer Questions (Compulsory) | 4x6=24 |
| Q3. Any Three Long-Answer Questions | 3x12=36 |

Internal Assessment

- | | |
|-------------------------------|----------|
| (a) Two Midterm Test | 2x7.5=15 |
| (b) Seminar & Home Assignment | 2x2.5=5 |
| (c) Regularity & Conduct | 10 |

UNIT-I

BASIC CONCEPT OF YOGA

- Introduction to Yoga: Definitions of Yoga, Thinkers on yoga and their views- Patanjali, Gherand and; Goraksh; Karma Yoga, Bhakti Yoga and Gyan Yoga; Concept and Characteristics.
- Raja Yoga : Eight steps of Yoga: Description and Significance of Yamas and Niyamas.
- Asanas and Pranayama: Methods, advantages and limitations; Concept of Prana and Nadis; The subtle body, Chakras.
- Pratyahara and Dharana : Significance and techniques; Pratyahara and Dharana - Yoga Nidra, Antarmansa, Ajapa Jap.
- Hath Yoga : Shatkarmas - their methods, benefits and limitations
- Body and Mind: Body-mind relation; the conscious, subconscious and unconscious; Psychosomatic disorders.

UNIT-2

APPLICATION OF YOGA

- Yogic Lifestyle and Health: Medical concept and definition of health, Causes of disease according to medical science and yoga, Basic instincts and their management through yoga;

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2. **Diet and Nutrition** : Medical and Yogic concept of diet; the three Gunas in relation to diet.
3. **Effect of Yoga on body systems**: The Bones and Joints, Cardiovascular, Respiratory, Digestive, Nervous, Endocrinal and Excretory systems. Preventive, Promotive and curative effects of Yoga.
4. **Stress management** : Concept and types of stress, Effects of stress on body and mind, Yogic management techniques.
5. **Social Health management** : Causes and effects of crime and substance abuse on society, Role of Yoga as supporting and transforming agent.

UNIT-3

- (i) Pawanuktasana - Part I, II and III
- (ii) Relaxation asanas - Shawasana, Adwasana, Makarasana, Matsyakridasana.
- (iii) Meditative Asanas - Padmasana, Siddhasana, Siddhayoniasana, Sukhasana.
- (iv) Standing Asanas - Tadasana, Triyaktadasana, Katichakrasana, Dwikonasana, Trikonasana
- (v) Vajrasana Series- Vajrasana, Suptavajrasana, Singhasana, Shashankasana, Ustrasana, Vyaghrasana.
- (vi) Forward Bending Asanas- Pashchimottanasana, Janushirasana.
- (vii) Backward Bending Asanas - Bhujangasana, Tiryakbhujangasana, Shalabhasana, Dhanurasana, Chakrasana, Gomukhasana, Kandhrasana

UNIT-4

- (i) Gatyatmak Asanas - Suryanamaskar, Shankhprakhshalana Asanas.
- (ii) Inverted Asanas - Bhumipadmastasana, Sarvangasana, Halasana
- (iii) Pranayama- Prepranayama Practices, Yogic Breathing, Nadishodhan upto stage III, Kapalhati, Bhastrika, Bhramari
- (iv) Mudras and Kriyas - Gyan, Chin, Shambhawi, Nasikagra, Ashwini, Khechari, Agnisar
- (v) Bandhas - Jalandhar, Moola, Uddiyana, Mahabandha
- (vi) Shatkarmas - Kunjal, Jalneti, Laghoshankhprakhshalana, Trataka,

UNIT-5

Assignment/Vocational Training

(*1 unit = 1 credit)

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(b) James Conception of Truth

Unit-V :

1. Logical Positivism: (a) Elimination of Metaphysics
(b) Function of Philosophy
(c) Verification Theory of Meaning
2. Phenomenology- (a) Phenomenological Methods - (i) Epoche
(ii) Reduction
(b) Criticism of Psychologism

SUGGESTED BOOKS

1. R.C. Pandey - Phenomenology (Hindi Edition)
2. B.K.Lal - Samkalin Pashtatya Darshan
3. Nityanand Mishra - Samkalin Pashtatya Darshan
4. H.N.Mishra - Samkalin Pashtatya Darshan
5. Ajit Kumar Sinha - Samkalin Darshan
6. John Passmore - A Hundred Years of Philosophy
7. D.M.Datta - The Chief Current of Contemporary Philosophy

SUGGESTED ANSWERS

1. *SRG 29/13/19*

2. *SRG 29/13/19*

3. *SRG 29/13/19*

4. *SRG 29/13/19*

5. *SRG 29/13/19*

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M.A. SEMESTER-III
Phil. CC- 11
WESTERN ANALYTICAL PHILOSOPHY

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question x marks

- | | |
|---|---------|
| Q1. Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q2. Any Four Short-Answer Questions (Compulsory) | 4×6=24 |
| Q3. Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

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|-------------------------------|----------|
| (a) Two Midterm Test | 2x7.5=15 |
| (b) Seminar & Home Assignment | 2x2.5=5 |
| (c) Regularity & Conduct | 10 |

Unit-I :

1. L.Wittgenstein

- (a) Picture theory of meaning
- (b) Language Game

Unit-II :

1. G.Ryle

- (a) Category Mistake and Cartesian Myth
- (b) Ghost in the machine

Unit-III :

1. J.L.Austin

- (a) Analysis of Speech act
- (b) Distinction between constative and performative statements.

Unit-IV :

1. P.F.Strawson

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(a) Descriptive Metaphysics

(b) Concept of Person

Unit-V :

1. W.V.O. Quine - Radical Empiricism
2. Derrida - Theory of Deconstruction

SUGGESTED BOOKS

1. Alston - The Philosophy of Language
2. Ayer - Language, Truth and Logic
3. Alston - 20th Century Philosophy
4. Ryle - Concept of Mind
5. Picher - The Philosophy of Wittgenstein
6. J.L.Austin - How to do things with Words
7. J.L.Austin - Its and Cans
8. F.Wilamann - The Principles of Linguistic analysis
9. P.F.Strawson - Individual
10. P.K.Sen and R.R.Verma - Philosophy of P.F.Strawson
11. Robert R.Ammerson - Classics of Analytic Philosophy
12. W.V.O. Quine - From A Logical Point of View
13. J.L.Austin - Philosophy of Language
14. W.V.O. Quine - Word and Object
15. B.K.Lal - Samkalin Paschatya Darshan
16. Nityanand Mehra - Samkalin Paschatya Darshan
17. R.N.Prasad Diwaker - Paschatya Darshan Ek Awalokan
18. Derrida - Margins of Philosophy

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M.A. SEMESTER-III
Phil. CC- 12
INDIAN LOGIC

Time: 3 hours

Full Marks: 70

The Students are required to attempt.

Q1. Ten Multiple Choice Questions from each unit (Compulsory)	1×10=10
Q2. Any Four Short-Answer Questions (Compulsory)	2×5=24
Q3. Any Three Long-Answer Questions	3×12=36

Internal Assessment

(a) Two Mid term Test	7½×2=15
(b) Seminar & Home Assignment	2½×2=5
(c) Regularity & Conduct	10

Unit-I :

1. Definition of Anumana : Nyaya and Buddhist Perspectives

Unit-II :

1. Constituents of Anumana : Nyaya, Buddhist and Jaina Perspectives

Unit-III :

1. Vyapti : Nyaya, Buddhist and Jaina Perspectives

Unit-IV :

1. Types of Anuman : Nyaya, Buddhist, Jaina and Advaitic perspectives

Unit-V :

1. Hetvabhasas : Nyaya

SUGGESTED BOOKS

1. Vivanath	-	Bhasaperichheda.
2. Annambhatta	-	Tarkasangraha
3. Dnag	-	Nyayapravasa
4. Dharmakirti	-	Nyayabindu
5. Vaiddev Suri	-	Pramannayatattvalokakara
6. Hema Chandra	-	Pramanamimansa
7. Uddyotakara	-	Nyaya Vartika
8. Jagdisa	-	Tarkamrita
9. Naresh Pd. Tiwari	-	Bhartiya Tarkshatra
10. K.N.Tiwari	-	Bhartiya Tarkshatra Parichaya
11. B.N.Sharma	-	Bhartiya Darshan Mein Anumana

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M.A. SEMESTER-III
Phil. CC- 13

PHILOSOPHY OF RELIGION - I

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Questions & marks

- | | |
|--|---------|
| Q.1. Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q.2. Any Four Short-Answer Questions (Compulsory) | 4×6=24 |
| Q.3. Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

- | | |
|-------------------------------|----------|
| (a) Two Midterm Test | 2×7.5=15 |
| (b) Seminar & Home Assignment | 2×2.5=5 |
| (c) Regularity & Conduct | 10 |

Unit-I :

Topic : 1. Nature and Scope of Philosophy of Religion

Topic : 2. Religious Consciousness - Cognitive element, Affective element, Conative element

Unit-II :

Q.2. 1. Theories of the Origin of Religion - The anthropological origin of religion.
- The psychological origin of religion

Unit-III :

(a) 1. Freedom of Will, Karma and Rebirth

Unit-IV :

- Mysticism
- Atheism

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Unit-V :

1. Religion and Morality
2. Humanism and Religion

SUGGESTED BOOKS

1. H.Smart - The Religious Experience of Mankind
2. R.C.Zaehner - The Concise Encyclopedia of Living Faiths
3. J.Hick - An Interpretation of Religion
4. W.James - Varieties of Religious Experience
5. R.Otto - The Idea of the Holy
6. R.Swinburne - Faith and Reason
7. Flint - Philosophy of Religion
8. etc etc etc - etc etc etc

SUGGESTED BOOKS

1. H.Smart
2. R.C.Zaehner
3. J.Hick
4. W.James
5. R.Otto
6. R.Swinburne

M.A. SEMESTER-III
Phil. CC- 14

PHILOSOPHY OF RELIGION-II

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question x marks

- Q1. Ten Multiple Choice Questions from each unit (Compulsory) 10x1=10
- Q2. Any Four Short-Answer Questions (Compulsory) 4x8=24

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Q.2. Any Three Short-Answer Questions	3x7.5=22.5
Q.3. Any Three Long-Answer Questions	3x12=36

Internal Assessment

(a) Two Midterm Test	2x7.5=15
(b) Seminar & Home Assignment	2x2.5=5
(c) Regularity & Conduct	10

Unit-I :

1. Concept of Soul and Salvation
2. Problem of Evil and Suffering

Unit-II :

1. Religious fundamentalism
2. Religious tolerance

Unit-III :

1. Secularism
2. Conversion

Unit-IV :

1. Bhakti and Faith
2. Prayer and Worship

Unit-V :

1. Possibility of Universal Religion
2. Incarnation

SUGGESTED BOOKS

1. N.Smart - The Religious Experience of Mankind

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2. R.C.Zahner - The Concise Encyclopedia of Living Faiths
3. R.C.Zahner - Mystics, Sacred and Profane
4. J.Hick - An Introduction of Religion
5. W.James - Varieties of Religious Experience
6. S.Radha Krishnan - The Idealist view of life
7. N.K.Brahma - Philosophy of Religion
8. J.C.Plot - Philosophy of Religion
9. A.Thompson - A Modern Philosophy
10. M.M.Shanhadhar - Secularism

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**M.A. SEMESTER-III
AECC-2**

Human Values and Professional Ethics (3 Credits)

Gender Sensitization (2 Credits)

(One credit requires ten hours of theory and twenty hours of practical/assignment/field work)

Time : 3 hours

Full marks : 70

The Students are required to attempt

No. of Question x marks

- | | |
|---|---------|
| Q1. Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q2. Any Four Short-Answer Questions (Compulsory) | 4×6=24 |
| Q3. Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

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|----------------------|----------|
| (a) Two Midterm Test | 2×7.5=15 |
|----------------------|----------|

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- (b) Seminar & Home Assignment 2x2.5=5
- (c) Regularity & Conduct 10

Unit-I : Variety of Moral Issues, Principles of Ethics and Morality:-

Understanding the Harmony in the Society (society being an extension of family). Integrity, Work Ethics, Courage, Empathy, Self Confidence, Professional Ideas and Virtues. Ethics as a Subset of Morality. Ethics and Organizations, Duties and Rights of employees and employers.

Unit-II : Holistic approach to corporate ethics:-

Vedantic Ethics- Tagore, Vivekanand, Gandhi and Aurobindo on Ethics, Ethics in Finance, Business and Environment, Professional Rights, Intellectual Property Rights, Corporate Responsibility, Social Audit and Ethical Investing, Computer and Ethics.

Unit-III : Professional Ethics:

Augmenting Universal Human Order, Characteristics of People-friendly and eco-friendly production, Strategy for Transition from the Present State to Universal Human Order, At the Level of Individual- as Socially and Ecologically Responsible Technologists and Managers. At the Level of Society- as Mutually Enriching Institutions and Organizations. Case Studies of typical holistic technologies and management patterns.

Unit-IV :

Gender : Definition, nature and evolution, culture, tradition, historicity; Gender spectrum; biological, sociological, psychological conditioning; Gender based division of labour - domestic work and use value.

Unit-V :

Gender Justice and human rights: international perspectives, Gender: Constitutional and legal perspectives, media & gender, Gender: emerging issues and challenges.

Right to Privacy, Right to Information, Right to Freedom of Expression, Computer and Ethics.

Unit-III : Professional Ethics: M.A. SEMESTER-IV

Approach to the Course

In this semester, there are two Groups-A and B. Students may opt. any one out of A and B. Each Group contains two papers (Paper-15 & Paper-16) i.e. EC-I and EC-II. With these two papers, students are also required to opt. either GE-I Or DSE-I in this semester.

Unit-IV :

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- 27/13/19
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- K. KUMAR 27-05/19

**Group-A
EC-I (Paper- 15)**

SACRED TEXTS

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question x marks

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|---|---------|
| Q1. Ten Multiple Choice Questions from each unit (Compulsory) | 10×1=10 |
| Q2. Any Four Short-Answer Questions (Compulsory) | 4×5=24 |
| Q3. Any Three Long-Answer Questions | 3×12=36 |

Internal Assessment

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|-------------------------------|----------|
| (a) Two Midterm Test | 2×7.5=15 |
| (b) Seminar & Home Assignment | 2×2.5=5 |
| (c) Regularity & Conduct | 10 |

(1) Bhagvadgita - Radhakrishnan (3 credits)
Unit-I : Gyana Yoga, Karma Yoga, Bhakti Yoga.

Unit-II: Svadharma, Lokasangraha, Isthitapragyata

Unit-III: Purushottama, Ethics of the Gita, Synthesis of Yoga.

(2) Dhammapada - Radhakrishnan (2 credits)

Unit-IV : Arhat, Bhikshu, Brahmana

Unit-V : The Buddha (The awakened), Lokavaggo (The world).

M.A. SEMESTER-IV

EC-II (Paper-16)

PROJECT WORK/DISSERTATION

Full Marks: 70

To be submitted by the student under the supervision of a teacher of the department.

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M.A. SEMESTER-IV

Group-B

EC-I (Paper- 15)

PHILOSOPHY OF VEDANTA AND SANKHYA

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question x marks

- | | |
|---|---------|
| Q1. Ten Multiple Choice Questions from each unit (Compulsory) | 10x1=10 |
| Q2. Any Four Short-Answer Questions (Compulsory) | 4x6=24 |
| Q3. Any Three Long-Answer Questions | 3x12=36 |

Internal Assessment

- | | |
|---|----------|
| (a) Two Midterm Test | 2x7.5=15 |
| (b) Seminar & Home Assignment | 2x2.5=5 |
| (c) Regularity & Conduct | 10 |
| (1) Vedanta Philosophy (3 credits) | |

Unit-I : Shankara - Brahman and Maya, Ramanuja - Brahman and Rejection of Maya

Unit-II: Madhya-Bondage and Liberation, Nimbarka-Ishwara and Jiva

Unit-III: Vallabha-Brahman and Bhakti

(2) Sankhya Philosophy (2 credits)

Unit-IV : Theory of causation, Prakriti and Gunas, Purusha and Purusha-Bahutva (Plurality)

Unit-V : Evolution, Bondage and Liberation.

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M.A. SEMESTER-IV
EC-II (Paper-16)

Full Marks: 70

To be submitted by the student under the supervision of a teacher of the department.

M.A. SEMESTER-IV
GE-I

Generic Elective (GE) Course	
Course title: Human Rights	
Course code: GE-I	Credit 5 (There shall be 5 units each consisting of one credit)
Course Offered in : Semester-IV	
Course content:	
Unit	Topic
I	Conceptual Aspects of Human Rights (a) Meaning and Concept of Human Rights (b) Human Rights, Natural Rights, Civil Rights, Political Rights and Legal Rights.
II	Evolution of the Concept of Human Rights (a) Magna Carta, The united state declaration of Independence: The French Declaration of the Right of Man and the Citizen : United state Bill of Rights: Geneva Convention of 1864: Universal declaration of Human Rights, 1948. (b) International Bill of Rights, Significance of Universal Declaration of Human Rights International Covenant on Civil and Political Rights, International Covenant on Economic, Social and cultural Rights.
III	Diversity, Multiculturalism and Human Rights (a) Value of Diversity: Collective Cultural Rights and the Idea of Universal Human Rights. Multiculturalism and Minority Rights: Protection and promotion of Human Rights in Multicultural Societies. (b) Beyond Universal Human Rights: Universalism of human Rights, Nation-State and the Right to national Self-Determination: State Sovereignty and the politics of Universal Human Rights.
IV	Theoretical aspects of Human Rights (a) Theories of Human Rights- Liberal, Perspective Locke, Rousseau, J.S.Mill, Marxian Perspective-Marx, Gramsci

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	(b) Feminist Perspective of Human Rights
V	Assignment/Field Work based and Unit I, II, III and IV.

OR

Science and Human Values

Science and Religion

Case Study

OR
M.A. SEMESTER-IV
DSE-I

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ENVIRONMENTAL STUDIES

Time : 3 hours

Full marks : 70

The Students are required to attempt.

No. of Question & marks

Q1.	Ten Multiple Choice Questions from each unit (Compulsory)	10×1=10
Q2.	Any Four Short-Answer Questions (Compulsory)	4×6=24
Q3.	Any Three Long-Answer Questions	3×12=36

Internal Assessment

(a)	Two Midterm Test	2×7.5=15
(b)	Seminar & Home Assignment	2×2.5=5
(c)	Regularity & Conduct	10

Unit-I:

Man-nature relationship in Western thinkers Plato, Aristotle, Descartes, Hegel, Gandhi

Unit-II:

Man-nature relationship in different religions. Tribal Religion, Christianity, Islam, Hinduism, Jainism, Buddhism, Sikhism

Unit-III:

Ecological Problems : Poverty and Environment, Population and Environment, Philosophy of Ecology

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Unit-IV:

Environmental Ethics : Utilitarianism and Kantian Moral theory

Unit-V:

Science and Human values

Science and Religions

Save Earth

SUGGESTED BOOKS

1. Vawajt Gupta - Environmental Law
2. H.N.Pandey & S.K.Barik - Ecology, Diversity and Conservation
3. N.k.Verma - Population, Poverty and Environment
4. G.E.Maclean - Man and Nature
5. A.D.Ursal - Philosophy and the Ecological Problems of Civilisation
6. K.P.Srivastava - An Introduction to Environmental ethics
7. Kamla Prasad - Paryavarniya Adhyayan
8. Waring - Concept of Ecology
9. Jagdish Chandra Pandey - Samai Aur Paryavarna
10. H.N.Mishra - Paristhik Darshan
11. Tandra Patnaik - Issues in Practical Ethics

4. G.E.Maclean *****

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SYLLABUS FOR M.Sc. IN PHYSICS

1st SEMESTER

UNDER

CHOICE BASED CREDIT SYSTEM (CBCS)

(To be effective from 2018-19)

The recent developments in Physics, the topics included in the syllabus of M.Sc. (Physical Sciences) are used to provide the needs of Academic and Research Institutions and Institutions. An important objective of the course is to develop an understanding of these subjects at deeper levels, such as deep thinking and problem-solving and giving insight into the behavior of matter and radiation. The content covered in the first two semesters, are designed to bridge the gap between college and university level physics and to bring all students to a common point. These courses also aim at consolidating the college level knowledge of physics by providing much more logical and analytical treatment, which will be essential for the specialization courses in the third and fourth semesters, after the completion of these M.Sc. courses will be:

1. Strong analytical abilities.
2. Qualifies candidates for teaching of Physics and being research.
3. Knowledge of theoretical as well as experimental areas of Physics.
4. Capabilities to

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Head
University Department of Physics
B.R.A. BHILAI UNIVERSITY
Manasgpur-492001

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29/03/2019

Babasaheb Bhim Rao Ambedkar Bihar University, Muzaffarpur

Ist SEMESTER

		Assignments			10
		Attendance			10
		Attendance, Periodicity & Conduct			10
Practical Paper		Credit 04	Total Marks 100		
End Semester Examination (ESE)	1 Hour	1 Experiment to be performed			70
Continuous Internal Assessment (CIA)					30
Oral/Practical and presentation of Dissertation	1 Hour	1 Experiment to be performed after Dissertation presentation		10-15	10
CIA of Practical and Dissertation				15-20	20

Program Outcomes:

The recent developments in Physics, has been included in the enriched M.Sc. (Physics) Syllabus to meet the present day needs of Academic and Research Institutions and Industries. An important objective of the course is to develop an understanding of 'core physics' at deeper levels, each stage revealing new phenomena and greater insight into the behavior of matter and radiation. The various courses in the first two semesters, are designed to bridge the gap between college and university level physics and to bring all students to a common point. These courses also aim to consolidate the college level knowledge of physics by providing much more logical and analytical framework which will be essential for the specialization courses in the third and fourth semesters. After the completion of their M.Sc. Students will have :

1. Strong analytical abilities.
2. Qualifies needs for teaching of Science and doing research.
3. Knowledge of theoretical as well as experimental areas of Physics.
4. Capabilities to generate self-employment.

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29/2/19

Head

University Department of Physics
B.R.A. BIHAR UNIVERSITY
Muzaffarpur-612001

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5. Computational Skill and ICT development. (MINIMUM 1)

REFERENCE: Classical Mechanics (T. Tipler)

Course Objectives:

1. To give students a solid foundation in classical mechanics.
2. To introduce general methods of treating the dynamics of particles.
3. To give students skills in using mathematical techniques for solving problems.
4. To expose the students to Lagrangian and Hamiltonian formalisms and their applications.
5. To impart the wisdom regarding the concepts of "conservation" and "force" in various situations.

UgA
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Head
University Department of Physics
B.R.A. BUISAR UNIVERSITY
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The two-semester examination will be of 2-hour duration and will carry 70 marks. The question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (short type) covering the whole syllabus with 2 from each unit (10 x 2 = 20). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them (5 x 5 = 25). Part C will have two long answer questions with one question from each unit. The student is required to answer any three out of them (2 x 20 = 40).

Unit 1 - Lagrangian Dynamics and Hamiltonian formalism: Generalized Principle of virtual work, D'Alembert's principle and its applications; Lagrange's equations and its applications; Euler, Lagrangian and energy conservation; Concept of generalized coordinates, velocity dependent potential, generalized velocity and their units; principle, Hamilton's principle; Lagrange's equations from Hamilton's principle; Legendre transformation; Hamilton's equation and Hamilton's equation of motion; configuration space and phase space; Hamilton's equations from variational principle.

Unit 2 - Canonical transformations and Hamilton-Jacobi theory - Generating function, Canonical transformations and its examples: Group property, symplectic and Poisson brackets and other associated problems; reduction of motion; adiabatic invariant; Successive Poisson bracket transformations; action-angle variables; action-angle variables with resonance; the Hamilton-Jacobi equation; Separation of variables in two-dimensional motion; Action-angle variables and integrability - the KAM problem in action-angle space.

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SEMESTER I

MPHYCC-I: Classical Mechanics (5 Credits)

Course Objectives:

1. To give students a solid foundation in classical mechanics.
2. To introduce general methods of studying the dynamics of particle systems.
3. To give experience in using mathematical techniques for solving practical problems.
4. To apprise the students of Lagrangian and Hamiltonian formulations and their applications.
5. To apprise the students regarding the concepts of electrodynamics and its use in various situations.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with 2 from each unit ($10 \times 2 = 20$). Part B will have five short answer question, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer questions with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Lagrangian Dynamics and Hamiltonian formulation Constraints, Principal of 'Virtual Work', D'Alembert's principle and its applications Lagrange's equation and its applications factor integral and energy conservation. Concept of symmetry, velocity dependent potential. Variational calculus and least action principle. Hamilton's Principle Lagrange's equation from Hamilton's principle, Legendre transformation. Hamilton's function and Hamilton's equation of motion configuration space and phase space. Hamilton's equation from variational principle.

Unit 2 : Canonical transformations and Hamilton Jacobi theory : Generating function, Canonical transformation and its examples, Group property, Lagrange and Poisson brackets and other canonical invariants, equation of motions. Infinitesimal canonical theorem in Poisson bracket formalism, Jacobi principle and characteristic functions with example, the harmonic oscillator. Separation of variable in Hamilton-Jacobi equation; Action-angle variables and its examples - the Kepler problem in action-angle variables.

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Unit 3 : Central Force Motion and Rigid Body : Reduction to one-body problem. General Properties of central force, Effective potential, Motion in a central force field-general solution, Inverse Square Law force, Kepler's Laws – laws of gravitation from Kepler's laws, Virial theorem. Scattering in a central force field and in Laboratory Co-ordinates. The rigid bodies, Kinematics of rigid body motion, Orthogonal transformations, Euler's theorem and its applications. Finite and infinitesimal rotations, rate of change of a vector, the rigid body equation of motion. Coriolis effect, angular momentum and kinetic energy of motion about a point, the inertia tensor and the moment of inertia, the principal axis transformation, the Euler equations of motion.

Unit 4 : Small Oscillation : Formulation of the problem, the eigenvalue equation and the principal axis transformation, frequencies of free vibrations and normal coordinates, forced vibrations and the effect of dissipative forces. Resonance and beats.

Unit 5 : Relativity : Review of special theory of relativity –Lorentz transformations, 4-vectors, 4-dimensional velocity and acceleration; 4-momentum and 4-force; Covariant equations of motion; Relativistic kinematics (decay and elastic scattering); Lagrangian and Hamiltonian of a relativistic particle. General theory of relativity; Curved space-time; Eotvos experiment and the equivalence principle.

Course Outcomes:

1. Know the difference between Newtonian mechanics and Analytic mechanics.
2. Solve the mechanics problems using Lagrangian formalism, a different method from Newtonian mechanics.
3. Understand the connection between classical mechanics and quantum mechanics from Hamiltonian formalism.
4. Understanding of basic concepts of special and general theory of relativity.

Reference

1. N.C. Rana & P.S. Joag, Classical Mechanics, McGraw Hill, First Edition 2011
2. Herbert Goldstein, Charles P. Poole, and John L. Safko, Classical Mechanics, Pearson, Third Edition 2011.
3. John R. Taylor, Classical Mechanics, University Science Books, First Edition 2005.
4. David Morin, Introduction to Classical Mechanics, Cambridge University Press, First Edition 2008.

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MPHYCC-2 MATHEMATICAL PHYSICS (5 CREDITS)

Course Objectives:

1. To develop knowledge of mathematical Physics and its application.
2. To develop expertise in mathematical techniques those are required in Physics.
3. To enhance problem solving skills.
4. To give the ability to formulate, interpret and draw inferences from mathematical solutions.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer questions with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1: Linear Differential Equations and Special Functions :

Linear Differential Equations, Power series solution, Special Functions: Hermite, Legendre, Bessel, Laguerre Polynomials, Fourier and Laplace Transforms.

Unit 2: Elements of Complex analysis:

Analytic functions, Taylor and Laurent series, calculus of residues, nature of singularities, Evaluation of definite integrals, Jordan's Lemma.

Unit 3: Group Theory:

Groups, subgroups, cosets, invariant subgroups, factor groups, homomorphism and isomorphism, orthogonality theorems, Continuous groups with Special reference to $O(3)$, $SU(2)$, $SU(3)$.

Unit 4: Elementary Tensor Analysis:

Coordinate Transformations. Contravariant and covariant vectors, Contravariant, covariant and mixed tensors, tensor fields, symmetric and skew symmetric tensors, fundamental operations with tensors, metric tensor, conjugate tensors and associated tensors.

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Unit 5 : Geodics Christoffel's symbol, Parallel displacement vector, Riemann-Christoffel tensor, Epsilon tensor, Christoffel's Γ index symbol.

Course Outcome:

1. Master the basic elements of complex mathematical analysis.
2. Solve differential equations that are common in physical sciences.
3. Apply group theory and integral transforms to solve mathematical problems of interest in physics.
4. Understanding how to use special functions in various physics problems.
5. Properties of covariance and principle of equivalence.

Reference :

1. Arfken & Weber, Mathematical Methods for Physicists, Elsevier, Sixth Edition 2012.
2. Murray R. Spiegel, Schaum's Outline of Advanced Mathematics for Engineers and Scientists, McGraw Hill, First Edition 2009.
3. Mary L. Boas, Mathematical Methods in the Physical Sciences, John Wiley, Third Edition 2005.
4. Murray R. Spiegel, Seymour Lipschutz, John J. Schiller, and Dennis Spellman, Schaum's Outline of Complex Variables, McGraw Hill, Second Edition 2009.

MPHYCC 3 QUANTUM MECHANICS (5 CREDITS)

Course Objectives :

1. To illustrate the inadequacy of classical theories and the need for a quantum theory.
2. To explain the basic principles of quantum mechanics.
3. To develop solid and systematic problem solving skills.
4. To apply quantum mechanics to simple systems occurring in atomic and solid state physics.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The questions paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with atleast one from each unit (10 x 2=20). Part B will have six short answer questions, with one question from each unit. The student is required to answer any

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four out of them ($4 \times 5 = 20$), Part C will have six long answer questions with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Basics of Quantum mechanics :

Origin of quantum mechanics, particle aspects of radiation, wave aspect of radiation, particle versus waves, intermediate nature of microphysical world quantization rules and wave packets.

Unit 2 : Mathematical Foundations:

Linear vector spaces, dimensionality, basis, eigenvalue equations, orthogonality and completeness conditions; Observables, Dirac's Bra and Ket notation, Properties of Hermitian operators, unitary and similarity transformation, Operators, Fourier Transform. Wave function as a vector in Hilbert space, Superposition principle; Representations. Relation between ket and wave function. Eigenvalue spectrum of linear momentum and its wave functions; Transformation between coordinate and momentum representations. Ehrenfest Theorem.

Unit 3 : Quantum Dynamics:

Schrodinger, Heisenberg and Interaction pictures, Linear Harmonic Oscillator solution using Schrodinger picture and Heisenberg picture (Matrix Mechanics, Angular Momentum, Spin and parity operators: symmetry and conservation principle definition of angular momentum, ladder operators, allowed values, construction of angular momentum matrices, Spin and Pauli spin matrices; Coupling of angular momentum, C.G. Coefficients.

Unit 4 : Perturbation theory:

Time independent perturbation theory for discrete levels – non-degenerate and degenerate cases, removal of degeneracy. Spin-Orbit coupling, Fine Structure of Hydrogen, Variation method, Time dependent perturbation theory, - constant and periodic perturbations. Fermi Golden rule, WKB approximation, sudden and adiabatic approximations.

Unit 5 : Scattering theory:

Quantum Scattering theory Differential and total cross sections scattering amplitude, Formal expression for scattering amplitude – Green's functions. Born approximation – Application to spherically symmetric potentials.

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Course Outcome:

1. To have a working knowledge of the foundations, techniques and key results of quantum mechanics.
2. To comprehend basic quantum mechanical applications at the research level
3. Gain an ability to competently explain/teach quantum physics to others.

Reference :

1. B.H. Bransden and C.J. Joachain, Quantum Mechanics, Pearson, Second Edition 2007.
2. David J. Griffiths, Introduction to Quantum Mechanics, Pearson, Second Edition 2008.
3. Yoav Peleg, Reuven Pnini, Elyahu Zaarur, and Eugene Hecht, Schaum's Outline of Quantum Mechanics, McGraw Hill, Second Edition 2010.
4. P.M. Mathews and K. Venkatesan, Quantum Mechanics, McGraw Hill, Second Edition 2010

MPHYCC-4 LAB 1 (5 CREDITS)

Course Objectives:

1. To make the student familiarize with the basics of experimental physics.
2. To enable the student to explore the concepts involved in the thermodynamics and heat.
3. To make the student understand the basic concepts in modern optics.
4. To allow the student to understand the fundamentals of instruments involved.

List of experiments (minimum 12) :

1. Measurement of Hall Coefficient of given semiconductor: identification of type of semiconductor and estimation of charge carrier concentration.
2. Young Modulus (Optical fringe method)
3. Young's Modulus- Hyperbolic fringe method.
4. Four probe Method- Determination of resistivity of semiconductor at different temperatures.
5. Determination of Ultrasonic velocity in gen liquid for a fixed frequency.
6. Determination of optical absorption coefficient and determination of refractive index of the liquids using He-Ne Laser.
7. Measurement of laser parameters using He-Ne laser/diode laser
8. Refractive index of liquids/Using He-Ne laser/Diode laser.

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9. Determination of wavelength of a laser by Michelson Interferometer method
10. Determination of semiconductor band gap
11. Thermistor- Determination of energy gap
12. Determination of numerical aperture of an optical fiber
13. Determination of wavelength of a laser source using diffraction grating.
14. Determination of operating voltage of a GM tube and determine the linear absorption
15. Determination of operating voltage of a GM tube and verify inverse- square law
16. Direct reading of Zeeman effect (s/m of an electron) with a laser source
17. Compact microwave training system Experiment
18. Stefan's constant
19. Susceptibility – Guoy and Quneka's methods.
20. Hydrogen spectrum and solar spectrum – Rydberg constant.

Course Outcome

At the end of the course,

1. The student should have knowledge of the different experimental techniques.
2. The student should have understood the basics of physics involved in experiments.
3. The student should be able to apply the concepts of physics and do the interpretation and acquire the result.

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SEMESTER II

PHY502 MODELING AND SIMULATION (3 CREDITS)

Inter disciplinary in nature. Recommended

To be selected by students of other programme as DSE /GE

Course Objectives :

1. To encourage students to "discover" in a way how physicists learn by doing research.
2. To address analytically intractable problems in physics using computational tools.
3. To enhance the various computational technique with programming in Fortran/C++/Python/Java to face the world of problems using high performance iteration techniques.
4. To show how physics can be applied in a much broader context than discussed in traditional curriculum.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The questions paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit (10 x 2=20). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them (4 x 5 = 20). Part C will have five long answer questions with one question from each unit. The student is required to answer any three out of them (3 x 10 = 30).

Unit 1 : Programming in Fortran:

FORTSIAN Programming, Flow chart, integer and floating point arithmetic built in functions array and Subroutine File I/O.

Unit 2 : Programming with Python:

Program development, Variables Expressions and statements, Functions, Conditionals and Recursion, Iteration, Strings, Lists, Dictionaries, Tuples, Files, Types of errors and Debugging, Function Libraries, loop and control structure, some simple application.

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Unit 3 : ODE and PDE:

ODE: RK method, Leap Frog method: Application to electron motion in electric and magnetic fields, Non-linear equations: PDE Laplace and equations, Poisson equation; (2-D mass ion.

Unit 4 : Matrix Problems:

Jacobi method for matrix inversion techniques for solving eigenvalue problems, Simultaneous orthogonality, Diagonalization, Hermitian.

Unit 5 : Numerical method and simulation:

Methods of finding roots of equation, Bisection method, Newton Raphson method, Interpolation, Taylor series, Numerical differentiation, Numerical integration, Curve fitting- Least Square fitting, Cubic spline fitting, Random number generators, Monte Carlo integration Metropolis algorithm, Ising Model.

Course Outcome:

1. Learn how to interpret and analyze data visually, both during and after computation.
2. Gain an ability to apply physical principles to real-world problems.
3. Acquire a working knowledge of basic research methodologies, data analysis and interpretation.
4. Understand various simulation techniques which can be used in future by students to analyse the data.

Reference :

1. Rubin H. Landau Manuel J. Paez. Computational physics-Problem solving with computers, John Wiley & Sons, New York (1997)
2. P.L. DeVries, A First Course in Computational Physics, John Wiley & sons, New York (1994).
3. G. Golub and J.M. Ortega Scientific Computing: An Introduction with Parallel Computing. Academic Press, San Diego (1993).
4. J.M. Thijssen, Computational Physics, Cambridge University Press, Cambridge, 1999.

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PHYYC 6 ELECTRODYNAMICS AND PLASMA PHYSICS (5 CREDITS)

Course Objectives :

1. To apprise the students regarding the concepts of electrodynamics and its use in various situation.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with 2 from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer questions with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Electromagnetic wave equation and field vectors:

Maxwell's equations in free space. Plane wave in free space. Dispersion of electromagnetic waves, Poynting vector in free space. Polarization of electromagnetic waves; electric field vector in terms of scalar and vector potential, Wave equation in terms of scalar and vector potential.

Unit 2 : Electromagnetic wave equation and its interaction with matter on macroscopic scale:

Electromagnetic waves (EMW) in free space, propagation of EMW in isotropic, anisotropic dielectrics, in conducting media; Boundary conditions, reflection and refraction of EMW, Fresnel formulae, Brewster's law and degree of polarization total internal reflection and critical angle, reflection from a metallic surface, Propagation of EMW between conducting planes, Wave guides: TE and TM mode, Transmission lines, Rectangular and cylindrical wave guides, cavity resonator.

Unit 3 : Fields of moving charges and Radiating System:

Retarded Potentials, Lienard Wiechert potentials, field of a point charge in uniform rectilinear motion, in arbitrary motion, Radiation from an accelerated charged particle at low and high velocity. Radiating System: Oscillating electric dipole, radiation from an oscillating dipole from a small current element, from a linear antenna, Antenna arrays.

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Unit 4 : Relativistic Electrodynamics:

Transformation equation for current density and charge density, vector potential and scalar potentials, the electromagnetic field tensor, transformation equation for electric and magnetic field, Covariance of Maxwell in four tensor form, covariance of Maxwell and transformation law of Lorentz force.

Unit 5 : Plasma Physics:

Elementary concepts of plasma, derivation of moment equations from Boltzmann equation. Plasma oscillation, Debye shielding, plasma confinement, magneto plasma. Fundamental equation hydromagnetic waves magnetosonic waves. Alfvén waves, wave propagation parallel and perpendicular to magnetic field.

Course Outcome:

Students will have understanding of:

1. Time-varying fields and Maxwell equation.
2. Various concepts of electromagnetic waves.
3. Radiation from localized time varying sources and the charged particle dynamics.

Reference :

1. Introduction to Electrodynamics, David J. Griffiths, Prentice-hall of India. Third Edition, 2009.
2. Classical Electrodynamics, J.D. Jackson, Wiley Publishing, New York 2nd Edition, Eight Print, 2002.
3. J.A. Bittencourt, Fundamentals of Plasma Physics. Third edition (Springer Publication, 2004.

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MPHYCC 7 ELECTRONICS I (3 CREDITS)

Course Objectives :

1. To make the student familiarize with the basics of electronics.
2. To enable the student to explore the concepts involved in the oscillators.
3. To make the student understand the basic concepts in IC and digital devices.
4. To allow the student to understand the fundamentals of multivibrators.
5. To provide in-depth theoretical base of Digital Electronics.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 3 = 12$). Part C will have five long answer questions with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Semiconductor devices:

BJT, JFET, MOSFET (Enhancement and depletion types), UJT, SCR, TUNNEL Diode, Zener Diode: Structure, working and characteristics.

Unit 2 : Amplifiers and feedback:

BJT biasing, design of a CE transistor amplifier, small signal model, emitter follower, Negative feedback and its properties (effect of feedback on different parameters), types of feedback, Oscillators: Principles, Barkhausen criterion, frequency stability, phase shift oscillator, Wien bridge oscillator.

Unit 3 : Operational Amplifiers:

Operational amplifier block diagram, ideal and practical op-amp characteristics, Op-amp circuits, inverting and non-inverting amplifier, adder, subtractor, differentiator, integrator, current to voltage converter.

Unit 4 : Digital Electronics:

Number system and codes, binary arithmetic, logic gates: AND, OR, NAND, NOR, NOT, XOR, Boolean algebra theorems, De-morgan's theorems, Minterm and Maxterm representation, simplification using

Boolean algebra theorems and K-maps, half and full adders, flip-flops-RS and JK Elementary ideas of Registers, counters, comparators.

Unit 5 : Microprocessor and small microcontroller :

Microcomputer block diagram, system bus 8085 Microprocessors, architecture and operation, Assembly language Instructions (classification only).

Course Outcome:

Students will have understanding of:

1. Fundamental designing concepts of different types of Logic Gates, Minimization techniques etc.
2. Designing of different types of the Digital circuits and to give the computational details for Digital circuits.
3. Characteristics of devices like PNP and NPN junction diode and truth tablets of different logic gates.
4. Basic elements and to measure values with multimeter and their characteristic study.
5. How to construct electronic circuit.

Reference :

1. J. Millman, and H. Taub, Pulse Digital and Switching Wave form, Tata McGraw Hill, (1991).
2. R.L. Boylestad and L. Nashelsky, Electronic Devices and Circuit Theory, Prentice Hall of India, (2007).
3. D.A. Bell, Electronics Devices and Circuits, Oxford University, (2008).
4. Ben G. Streetman, Solid state electronic devices, Prntice Hall, Englewood cliffs, NJ (1999).
5. R.A. Gayakwad, Op-Amps & Linear integrated circuits Prntice Hall India Pvt. Ltd. (1999).

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MPHYCC-8 STATISTICAL MECHANICS (5 CREDITS)

Course Objectives :

1. The course is to understand the basics of Thermodynamics and Statistical system.
2. Understand the various laws of thermodynamics.
3. Acquire the knowledge of various statistical distributions.
4. To comprehend the concepts of Enthalpy, phase transitions and thermodynamic functions.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit (10 x 2=20). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them (4 x 5 = 20). Part C will have five long answer questions with one question from each unit. The student is required to answer any three out of them (3 x 10 = 30).

Unit 1 : The statistical basis of thermodynamics:

Postulates of classical statistical mechanics, macroscopic and microscopic states, Phase space, Ensemble-microcanonical, canonical and grand canonical, Statistical equilibrium, density distribution of phase point, Liouville's theorem.

Unit 2 : Ideal classical gas:

Partition function of a classical ideal gas, thermodynamical potentials in terms of partition function for an ideal monoatomic gas in microcanonical and grand canonical ensembles, entropy of mixing and Gibbs paradox, Maxwell-Boltzmann distribution law, entropy of monoatomic gas.

Unit 3 : Quantum statistics and Application :

Density matrix, quantum ensembles, ideal Bose gas, Bose condensation, liquid He II, superfluidity and Landau's Theory.

Unit 4 : Quantum statistics and Applications in:

Ideal Fermi gas, specific heat and Pauli paramagnetism, Principle of detailed balance, Landau diamagnetism, white dwarfs and Chandrasekhar limit, Ising model, Random walk and Brownian motion.

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Unit 5 : Nonequilibrium processes :

Features of Equilibrium and Non Equilibrium Thermodynamics, Linear theory of Non Equilibrium Thermodynamics, Current and Affinity, Onsager relation, Fluctuations, Microsystems.

Course Outcome:

At the end of this course, students will be able to:

1. Basic knowledge of thermodynamic systems.
2. Understand the basic idea about statistical distributions.
3. Impart the knowledge about the phase transitions and potentials.
4. Understand the application of statistical laws.

Reference :

1. Introduction to Thermodynamics, Classical and Statistical, 3rd Edition Richard E. Sonntag (University of Michigan), Gordon J Van Wylene (Hope College) ISBN 978-0-471-61427-2, 1997.
2. Pathria R.K. Statistical Mechanics, 2nd Edition, Elsevier, 1996.
3. Thermodynamics and Statistical mechanics author by John m. seddorn and Julian d. gale 3rd edition, R.S.C. publication, 2001, U.K.

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MPHYCC -9 Lab-9 (5 CREDITS)

Course Objectives :

1. To encourage students to "discover" physics in a way how physicists learn by doing research.
2. To address analytically intractable problems in physics using computational tools.
3. To enhance and various computational technique with programming basic in C to face the world of problems using high performance iteration techniques.
4. To show how physics can be applied in a much broader context than discussed in traditional curriculum.

PROGRAMMING NUMERICAL METHODS USING FORTRAN LANGUAGE (ANY 8):

1. To find mean, standard deviation and frequency distribution of an actual data set from any physics experiment.
2. Successive Approximation (method of iteration), Newton Raphson method.
3. The Bisection method
4. Gauss Elimination method.
5. Matrix inversion, Lagrange's Interpolation Formula.
6. Trapezoidal Rule, Simpson's rule.
7. Euler's method, Runge-Kutta method (Fourth Order).
8. Predictor corrector methods.
9. To find mean, standard deviation and frequency distribution of an actual data set from any physics experiment.
10. To find the area of a unit circle by Carlo integration.
11. To simulate the random walk.

Course Outcome:

At the end of this course, students will be able to:

1. Understand the basic idea about finding solutions using computational methods basics.
2. Learn how to interpret and analyze data visually, both during and after computation.
3. Gain an ability to apply physical principles to real world problems.
4. Acquire a working knowledge of basic research methodologies, data analysis and interpretation.
5. Realize the impact of physics in the global/social context.

Reference :

4. Introduction to Thermodynamics, Classical and Statistical, 3rd Edition Richard E. Sonntag (University of Michigan), Gordon J Van Wylen (Hope College) ISBN 978-0-471-61427-2, 1997.
5. Pathria R.K. Statistical Mechanics, 2nd Edition, Elsevier, 1996.
6. Thermodynamics and Statistical mechanics author by John m. seddorn and Julian d. gale 2nd edition, R.S.C. publication, 2001, U.K.

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SEMESTER III

MPHYCC-10 ATOMIC AND MOLECULAR PHYSICS LASERS (5 CREDITS)

COURSE OBJECTS :

1. Objectives of this course is to learn atomic, molecular and spin resonance spectroscopy.
2. To understand mechanism and working of lasers.
3. To be able to understand atomic and molecular transmissions and selection rules.
4. To understand the Raman Effect and its applications.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit (10 x 2 = 20). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them (4 x 5 = 20). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them (3 x 10 = 30).

Unit 1 : Atomic physics:

Vector Atomic Model (LS, JJ and Coupling), Fine Structure and Hyperfine Structure, Zeeman Effect, Paschen-Back and Stark Effect, Intensity, Shape and width of spectral lines, Independent particle model, He atom as an approximation for many electron atomic systems, Slater determinants to write possible multiplets.

Unit 2 : Electronics and Molecular Spectra:

Molecule as non-rigid rotator, Anharmonic Oscillator (vibration-rotation system), Franck-Condon Principle, NMR and ESR, Spectra/Vibration of Polyatomic molecule, Electronic spectra of polyatomic molecules, Chemical analysis by electronic spectroscopy, Spectra of Hydrogen Molecule.

Unit 3: Molecular Potential:

Concept of Molecular Potential, Separation of electronic and nuclear wave function, Born-Oppenheimer approximation and its breakdown. Analysis by infrared techniques, Molecular orbital theory, LCAO approximation theories.

Unit 4: Raman and Spin Resonance Spectroscopy:

Vibrational and pure rotational Raman Spectra, Structure determination, Raman and infrared spectroscopic Technique and Instrumentation.

Unit 5: Laser:

Significance of Einstein's A and B coefficients, pumping schemes, Characteristics of Laser beams, Principles of Fiber Communication, Numerical Aperture, Laser Operation: Oscillator versus Amplifier, Laser, Resonators, Laser rate equations for three and four level Laser systems, Ruby Laser, He-Ne Laser,

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Semi-conductor Lasers, Liquid (Dye) Lasers, Gas (CO₂) Lasers, Laser applications in industry, Spectroscopy, Light detection and Ranging (LIDAR), scanning laser beam devices. Laser communication, (Injection photodiode and Avalanche Photodiode), and medical applications.

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MPHYCC-11 Condensed Matter Physics (5 CREDITS)

COURSE OBJECTS :

1. To study some of the basic properties of the condensed phase of materials especially solids.
2. To study electrical and magnetic properties of solids.
3. To understand superconductivity and various properties of semiconductors.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Crystal structure:

Reciprocal lattice and applications, Brillouin Zones, Laue equations and Bragg's law, Laue and powder diffraction; Structure factor, atomic form factor, intensity of diffraction maxima, extinctions due to Lattice centering.

Unit 2 : Electronic Properties:

Motion of electron in periodic lattice, Bloch theorem nearly free electron model, light binding and cellular methods, effective mass, intrinsic and extrinsic semi- conductors, Fermi Surface, Cyclotron resonance and de Haas-van Alphen effect.

Unit 3: Magnetic Properties:

Heisenberg model, molecular field theory, Spin waves and magnons, Curie-Weiss law for susceptibility, Theories of ferromagnetism, anti-ferromagnetism and ferrimagnetism.

Unit 4: Superconductivity:

Meissner effect, London equation, Flux quantization, Josephson effect, Crystal Defects: Point defects, line defects, planar faults, role of dislocations in Plastic deformation and crystal growth, colourcentres.

Unit 5: Dielectric Properties:

Microscopic concept of Dielectric polarization, Langevin theory of polarization, Clausius-Mossotti equation, Dielectric in Alternating Field, Complex Dielectric constant and Dielectric loss, ferroelectric, optical properties of crystals.

Course Outcomes:

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1. Structures in solids and their determination using XRD.
2. Behavior of electrons in solids including the concept of energy bands and effect of the same on material properties.
3. Electrical, thermal, magnetic and dielectric properties of solids.

References:

1. Introduction to Solid State Physics, 3rd & 6th Editions. C. Kittel, Wiley Publishing
2. Condensed Matter in a Nutshell, Will G.D. Mahan, Princeton Univ. Press 2011.
3. Solid State Physics, W. Ashcroft, N.D. Mermin Holt-Rinehar-Winston 1976.
4. Elementary Solid State Physics, Principles and Applications, Ali Omar. M Addison Wesley Publishing, 2011.

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Course Outcomes:





Students will have understanding of:

1. Atomic spectroscopy of one and two valance electron atoms.
2. The change in behavior of atoms in external applied electric and magnetic field.
3. Rotational, vibration, electronic and Raman spectra of molecules.
4. Electron spin and nuclear magnetic resonance spectroscopy.
5. Principle working and application of laser.

References:

1. H.I. White, Introduction to Atomic Spectra, McGraw Hill, (1934).
2. C.N. Banerjee and I. M. McCash, Fundamentals of molecular spectroscopy, Tata McGraw Hill, (2007).
3. G. Anulhas, Molecular structure and Spectroscopy, Prentice Hall of India, New Delhi, 2001.


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MPHYCC-12 Electronics II (Analog and Digital Electronics) (5 CREDITS)

COURSE OBJECTIVES:

1. To understand the working of advanced semiconductor devices and digital circuits and the utility of OP-AMP.
2. To learn the basics of integrated circuit fabrication, applications of timer IC-555 and building block of digital systems.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Operational Amplifiers construction and other linear devices:

Building blocks of an OP-AMP: Differential amplifier- dual input, balanced and unbalanced output amplifiers, current sources, 555 IC timer and its applications, Schmitt trigger, VCO and phase locked loops and their important applications.

Unit 2 : OP-AMP applications:

Instrumentation amplifier, logarithmic and exponential amplifiers, analog multiplication, comparators, astable and monostable multivibrators, half wave and full wave precision rectifiers, Active Filters-Second order Butterworth filters-LPF, HPF, narrow band and wide band, band-pass and band reject filters.

Unit 3: Digital Circuits and Combinatorial logic I:

Logic families TTL and CMOS, construction of basic gates characteristics, Combinatorial Circuits-2's complement adder and subtractor.

Unit 4: Combinatorial Logic II:

Decoder, encoder, multiplexer, demultiplexer, D/A and A/D converters.

Unit 5: Dielectric Properties:

Master-slave JK flip-flop, D and T flip-flops, edge triggered flip-flops, Registers and Counters-Shift registers, Bidirectional registers, ripple counter, synchronous counter, up-down counter, decade counter, Johnson and Ring counter.

Course Outcomes:

Students will have understanding of:

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1. Fundamental designing concepts of different types of logic Gates, Minimization techniques etc.
2. Designing of different types of the Digital circuits and to give the computational details for Digital Circuits.
3. Characteristics of devices like PNP and NPN junction diode and truth tables of different logic gates.
4. Basic elements and to measure their values with multimeter and their characteristics study.
5. Working of Flip-flops registers and counters.

References:

1. T.F. Schubert and E.M. Kim, Active and Nonlinear Electronics, John Wiley Sons, New York (1996).
2. I Floyd, Electronic Devices, Pearson Education New York (2004).
3. Denis Le Craithe, Transistors, Prentice Hall India Pvt. Ltd (1963).
4. J. Milman and C.C. Halkias, Integrated Electronics, McGraw Hill (1972).
5. A. Mottershed, Semiconductor Devices and Applications, New Age Int. Pub.
6. M. Goodge, Semiconductor Device Technology Mc Millan (1983)
7. S.M. Sze, Physics of semiconductor Devices, Wiley -Eastern Ltd.
8. Milman and Taub, Pulse, digital and switching Waveforms, McGraw Hill (1965).
9. Ben G. Streetman, Solid state electronic devices, Printice Hall, Englewood cliffs, NJ (1999).
10. R.A. Gayakwad, Op-Amps and Linear integrated circuits, Printice Hall India Pvt. Ltd. (1999).
11. Digital Electronics by R.P. Jain.

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MPHYCC-13 Nuclear and Particle Physics (3 CREDITS)

COURSE OBJECTIVES:

1. To study the general properties of nucleus.
2. To Study the nuclear forces and nuclear reactions.
3. To introduce the concept of elementary particles.
4. To impart knowledge about basic nuclear physics properties and nuclear models for understanding of related reaction dynamics.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 20 = 60$).

Unit 1 : Nuclear forces:

Exchange forces and tensor forces. Low energy nucleon-nucleon scattering, Effective range theory, Deuteron Problem, high energy nucleon-nucleon scattering Discussion, Charge independence, spin dependence and charge symmetry of nuclear forces, Isospin formalism: Yukawa interactions.

Unit 2 : Nuclear reactions:

Kinematics and conservation laws, Nuclear Reactions and Cross sections, Theory of Compound nucleus, Breit-Wigner single level formula, Mechanism of nuclear fission and fusion, Nuclear reactors.

Unit 3: Nuclear models:

(a) Single particle Shell model: Magic numbers, spin, parity, magnetic dipole moment, electric dipole moment, (b) The Nilsson unified model, (c) Collective model: Vibrational and rotational states, β and γ bands.

Unit 4: Nuclear decay:

(a) Fermi theory of β decay, allowed and forbidden transitions Parity violation in β decay and Helicity of neutrino (b) Radiative transitions in nuclei (γ -decay), Spontaneous decay, internal conversion, Mossbauer Effect.

Unit 5: Elementary Particle Physics:

Conservation Laws and Symmetry, Strangeness, hypercharge, CPT invariance, Classification of elementary particles, SU(2) symmetry and its application to decay and scattering processes, SU(3) symmetry and the Quark model, Elementary idea of chromo dynamics.

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Course Outcomes:

At the end of the course, the students can able to:

1. Acquire basic knowledge about nuclear and particle physics.
2. Develop the nuclear reactions and neutron physics.
3. Understand the nuclear fission and fusion reactions.
4. Impart the knowledge about the nuclear forces and elementary particles.

References:

1. Kenneth S. Krane, Introductory nuclear physics, Wiley India New Delhi (2008)
2. J. Basdevant, J. Rich, M. Spiro, Fundamentals in nuclear physics, Springer, New York (2005).
3. D. Griffiths, Introduction to elementary particles, Wiley VCH, Weinheim (2008).
4. D.C. Tayal, Nuclear Physics, 4th edition Himalaya House, Bombay (1980).

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1. Description of α and β decay and their characteristics.
2. Study of an α particle and its range using Geiger counter.
3. Study of β decay, continuous spectrum and end-point energy.
4. Study of an α and β emitter and their applications.
5. Study of an α and β counter circuit and its characteristics.
6. Description of γ ray emission, γ ray spectra, γ ray source and study of γ ray absorption.
7. γ ray spectra, γ ray of the source.
8. Study of γ ray and its applications.
9. Study of γ ray source.
10. Photoelectric effect experiment.
11. An experiment on Compton effect.

Course Objectives:

At the end of the course,

1. The student will have knowledge for the different experimental techniques involved in the course.
2. The student should be able to identify α , β and γ rays.
3. The student should be able to figure the spectrum of particles and all the characteristics and applications of α , β and γ rays.

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MPHYCC-14 Lab III (5 CREDITS)

COURSE OBJECTIVES:

1. To make the student familiarize with the basics of electronics.
2. To enable the student to explore the concepts involved in the oscillators.
3. To make the student understand the basic concepts in IC and digital devices.
4. To allow the student to understand the fundamentals of multivibrators.

LIST OF EXPERIMENTS (MINIMUM 12)

1. Study of Transistor Bias Stability.
2. Study of single stage RC coupled amplifier using transistor and its frequency response.
3. Study of two stage RC coupled amplifier using transistor and its frequency response.
4. Study of Silicon Controlled Rectifier.
5. Study the characteristics of UJT.
6. Experiment of FET and MOSFET characterization and application as an amplifier.
7. Study of an Astable multivibrator circuit using OP-AMP.
8. Study of adder, subtracter, differentiator and integrator circuits using the given OP-AMP.
9. Study of an A/C converter circuit and its performance.
10. Study of an D/A converter circuit and its performance.
11. Construction of half -adder and full -adder circuit using NAND gates and study their performance.
12. FLIP flops-RS, JK and D flip flops.
13. Shift register and Photo diode characteristics.
14. Photo-diode characteristics.
15. Photo-transistor characteristics.
16. Multiplexer and Demultiplexer.

Course Outcomes:

At the end of the course,

1. The student will have knowledge on the different experimental techniques involved in electronics.
2. The student should be able to independently construct the circuit.
3. The student should be able to apply the concepts of electronics and do the interpretation and acquire the result.

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IV SEMESTER

MPHYEC-IA Advanced Quantum Mechanics (5 CREDITS)

COURSE OBJECTIVES:

1. To impart knowledge of advanced quantum mechanics for solving relevant physical problems.

The End Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts, A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four-out of them ($4 \times 5 = 20$). Part C will have five long answer questions with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1: Theory of Scattering:

Laboratory and centre of mass reference frames, Differential and total cross sections, scattering amplitudes using green's function, scattering by symmetric potential, Partial wave analysis, Phase shift, scattering amplitudes in terms of phase shift, optical theorem, scattering by square well potential and perfectly rigid sphere; Born approximation, its validity, application to square well potential and Yukawa potential.

Units 2: Relativistic Quantum Mechanics:

Postulates of Quantum Mechanics, Space time description of Schrodinger Wave Equation, Klein Gordon equation, Dirac equation, covariant form; Plane wave solution; Dirac interpretation of negative energy states and concept of antiparticles; Spin and magnetic moment of the electron. Non relativistic reduction, Helicity and chirality; Properties of γ matrices charge conjugation; Normalization and completeness of spinors.

Unit 3: Quantum Field Theory:

Second Quantization-Lagrangian field theory, Hamiltonian formulation, Quantization of scalar field Quantization complex scalar and "Schrodinger" field, Bosons and Fermions.

Unit 4: Quantum Chromodynamics I: Introduction to quantum chromodynamics, Quark model.

Unit 5: Quantum Chromodynamics II: Standard model, Grand Unified Theories.

Course Outcomes:

Students will have understanding of:

1. Importance of relativistic quantum mechanics compared to non-relativistic quantum mechanics.
2. Various tools to understand field quantization and related concepts.
3. Exposure to quantum field theory and universal interactions.

References:

1. Mathews, P.M. and Venkatesan K.A., Textbook of Quantum Mechanics Tata McGraw Hill (2004).
2. Thankappan, V.K. Quantum Mechanics, New Age International (2004).
3. Sakurai, J.J., Advanced Quantum Mechanics, Pearson Education (2007).
4. Bethe, H.A. and Jackiew R., Intermediate Quantum Mechanics, Perseus Book Group (1997).

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MPHYEC-18 Advanced Condensed Matter Physics (5 CREDITS)

COURSE OBJECTS :

1. The course is to understand the basic knowledge on crystal structures and systems.
2. Understand the various process techniques available of X-Ray Crystallography
3. Acquire the knowledge of Lattice waves and Polarizations.
4. To comprehend the concepts of superconductivity and magnetic properties of solids.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Electron States:

Hartree and Hartree-Fock approximations, correlation energy, Screening plasma oscillations, Dielectric function of an electron gas in random phase approximation, limiting laws & Friedel oscillation.

Unit 2 : Electron-electron interaction:

Lindhard's expression for wave length and frequency dependent dielectric constant. Static screening, Kohn effect.

Unit 3: Superconductivity:

Energy gap, Cooper pair, BCS theory, Ginzburg-Landau theory, Josephson junction and its application, Microscopic quantum interference, High temperature superconductivity.

Unit 4: Magnetism:

The band model for ferromagnetism and its temperature dependence, Ferrimagnetism, Antiferromagnetism, magnetism effects in nanomaterials.

Unit 5: Dielectric Properties:

Theory of Dielectric, Piezoelectricity, Ferroelectricity, Antiferroelectricity and their applications, Nano-structured ferroelectric materials, Synthesis and Characterization principles of Ferroelectric nanomaterials, Multiferroic and Smart materials.

Course Outcome:

At the end of this course students will be able to:

1. Basic knowledge of crystal structures and systems.

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2. Understand the basic idea about the Electronic Properties of Solids.
3. Impart the knowledge about the properties magnetic Properties of Solids.
4. Understand the application of superconductivity.

References:

1. C. Donald Ahrens, Essentials of Meteorology, Brooks Cole Cengage Learning, USA, 2010.
2. Murry L. Salby, Fundamentals of Atmospheric Physics, Academic Press, Elsevier, USA, 1996.
3. David G. Andrews, An Introduction to Atmospheric Physics, Cambridge University Press, United Kingdom, 2000.

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Unit 1: Atmospheric and Atmospheric Chemistry

General composition and physical properties of the atmosphere, temperature structure, atmospheric circulation, vertical structure, optical properties, absorption of solar radiation, chemical composition, photochemical pollution.

Unit 2: Atmospheric Pollution

Definition, classification of air pollutants, air quality indices, chemical pollution, photochemistry of air pollutants, atmospheric ozone, acid rain, greenhouse effect and global warming.

Unit 3: Atmospheric Aerosols and Cloud Physics

Atmospheric aerosols, optical properties of dust, chemical composition and health effects, water potential of the atmosphere, vertical structure, temperature, density, viscosity, wind, turbulence, vertical stability, atmospheric stability.

Unit 4: Cloud Physics and Atmospheric Precipitation

Classification of clouds, growth of droplets by condensation, growth by collision-coalescence, warm rain, ice formation, snow, hail and rain by the process of precipitation, factors affecting cloud and rainfall, cloud microphysics, properties of precipitation particles, Transforms to surface precipitation.

Unit 5: Atmospheric Radiation

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MPHYEC-1C Atmospheric (Physics) (3 CREDITS)

COURSE OBJECTIVES :

1. To provide a keen knowledge on atmospheric behavior, description of air, stratification of mass, trace constituents, radiative equilibrium of the planet, global energy budget, and general circulation.
2. To provide a deep insight on physics of atmosphere, aerosols and clouds.
3. To understand the Short wave and long wave radiation, radiometric lamberts equation, radioactive heating, thermal relaxation and greenhouse effect.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit (10 x 2 = 20). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them (4 x 5 = 20). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them (3 x 10 = 30).

Unit 1: Introduction and Atmospheric Chemistry:

General description and basic facts; Regions of the Atmosphere Atmospheric chemistry; Composition, minor constituents, cycles of main elements, chemistry of sulphur, carbon, nitrogen compounds, photochemical pollution, aerosols.

Unit 2: Atmospheric Photo chemistry:

Radiation, absorption of radiant energy in the atmosphere, solar radiation, Chapman profile, photochemistry of ionosphere, stratospheric ozone, ozone hole; Greenhouse effect and its consequences, effective temperature.

Unit 3: Atmospheric thermodynamics and Cloud Physics:

Atmospheric system, Application of first law of thermodynamics to air and clouds, main processes in the atmosphere, cooling, potential temperature, adiabatic expansion with condensation, vertical stability, convective instability.

Unit 4: Cloud physics and Atmospheric Electricity:

Classification of clouds, growth of drops by condensation, growth by collision and coalescence, warm rain, ice formation, snow, hail and rain by ice process, ice precipitation Electric field and space charge, fundamental problem of atmospheric electricity, Thunderstorm-electricity, Lightning.

Unit 5: Atmospheric Dynamics:

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Principle forces acting on a parcel of air, acceleration of air parcel, equation of motion, continuity equation, scales of motion, important features of large scale atmospheric motion, Large scale mid latitude circulation system, thermal circulation global, circulation pattern, mid latitude cyclones.

Course Outcomes:






At the end of the course, students will be able to

1. Acquire knowledge on earth atmosphere governing by physical laws.
2. Achieve basic inputs for the global circulation of atmosphere.
3. Create a scope to identify new areas of research in the field of atmospheric science.

Reference:

1. Introduction to Solid State Physics, 3rd & 6th Editions, C. Kittel, Wiley Publishing.
2. Condensed Matter in a Nutshell, W.G.D. Mahan, Princeton Univ. Press 2011.
3. Solid State Physics, W. Ashcroft, N.D. Mermin Holt-Rinehart-Winston 1976.
4. Elementary Solid State Physics, Principles and Applications; Ali Omar. M Addison Wesley Publishing, 2011.


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MPHYEC-1D Biophysics (5 CREDITS)

COURSE OBJECTIVES:

1. The course is to understand the basic knowledge on biomolecular.
2. Understand the various theoretical modeling techniques involved in biomolecular systems.
3. Acquire the knowledge of Structure and function of Proteins, Carbohydrates + Nucleic acid.
4. To comprehend the concepts of Biochemistry and system biology.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1: Bioenergetics:

Principles of Thermodynamics, redox potential and free energy change of the reactions, Biological energy transducers.

Unit 2: Physical techniques in protein, nucleic acids and polysaccharide structural analysis:

UV Vis spectroscopy, Infrared spectroscopy, Fluorescence spectroscopy, Atomic absorption spectroscopy, Raman spectroscopy, NMR, Mass spectroscopy, Circular dichroism spectroscopy, X Ray Diffraction technique, TEM and SEM.

Unit 3: Centrifugation:

Principles, types, Differential and density gradient centrifugation and their applications; Chromatography: Principles, types (Paper TLC, Affinity, Ion exchange, Gel filtration, GLC, HPLC) and their applications.

Unit 4: Electrophoresis:

(Polyacrylamide gel electrophoresis (PAGE), SDS PAGE, agarose gel electrophoresis, 2D electrophoresis and their application.

Unit 5: Theoretical techniques and their application to Biomolecules:

Hard sphere Approximation, Ramchandran plot, Potential energy surfaces, Outline of Molecular Mechanics Method, Brief ideas about semi empirical and ab-initio quantum theoretical methods, molecular charge distribution molecular electrostatic potential and field and their uses.

Course Outcome:

At the end of the course, students will be able to

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1. Basic knowledge of Biomolecular of chemistry and functions.
2. Understand the basic idea about the Structure and Function of Nucleic Acids.
3. Impart the knowledge about the Function of Carbohydrates and Proteins.
4. Understand the applications of Biomolecules.

Reference:

1. Principles of Biochemistry by A.L. Lehninger, D.L. Nelson and M.M. Cox, CBS Publishers New Delhi, 1993.
2. Biochemistry by L. Stryer, W.H. Freeman and Co, Newyork, 1997.
3. Biophysics by Naranthapattabhi and N. Gautham, Narosa Publishing House, New Delhi, 2002.
4. Elementary Solid State Physics, Principles and Applications, Ali Omar. M Addison Wesley Publishing, 2011.

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MPHYEC-1E Lasers and Photonics (5 CREDITS)

COURSE OBJECTIVES:

On successful completion of this course, students will be able to

1. Describe and explain the principles involved in the interactions between light and matter, including the effects of anisotropy and non-linearity comprehend the modification and control of optical properties of materials by externally imposed electric, magnetic and acoustic fields.
2. Recall and recount the optical properties of semiconductor light sources and detectors expand the theory and applications of the confinement of light in waveguides and fibers.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Basic Principles:

Laser rate equation for three level and four level system, Dynamics of Laser Process: switching, Mode locking mode pulling, Lamb dip, hole burning, Energy levels and radiating properties of molecules, liquids and solids, Laser amplifier, Laser resonators, Techniques of laser excitation.

Unit 2 : Non-linear optical effects:

Harmonic generation, Second harmonic generation, Phase matching, Third harmonic generation, Optical mixing, parametric generation, Self-focusing of light, Two photon absorption, Doppler free two photon spectroscopy, Laser spectroscopy.

Unit 3: Application of Laser:

Fabrication of electronic components, Material processing; Laser communication, Holography, Military application, Medical applications, Star Wars, Laser hazards and Laser safety, Optical Amplifiers, Infrared optical devices, Laser cooling, Trapping.

Unit 4: Optical Fiber Communication:

Optical Fiber structure, Wave guiding and Fabrication of Fiber, Types of Fiber and Solution of Maxwell's equation inside Fiber. Signal degradation and attenuation in Optical Fibers.

Unit 5: Optical Fiber systems:

Optical sources (ILD and PIN Diode) and Optical Detectors (APD); Analog and Digital optical fiber Transmission System (PDH, SDH and WDM Technology).

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B.K.A. INHAR UNIVERSITY
Marathapuram-622001

Course Outcome:

1. Knowledge of fundamental physics of photonics is developed to a high level.
2. The course prepares students to be able to use sophisticated instrumentation intelligently, with a good understanding of its capabilities and limitations.

Reference:

1. Saleh BEA and MC Tech "Fundamentals of Photonics" John Wiley New York, 1991.
2. Pal BP(Fd) "Guided Wave Optical Components and Devices, Academic press, 2006.
3. Smit F G and TA King Optics and Photonics" John Wiley Chester, 2000.
4. Thyagarajan K and A Ghatak, " Nonlinear Optics in Encyclopedia of Modern Optics (Editors Bob Guenther etal)" "Flower Ltd. 2005.

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MPHYEC-2F Measurement and Instrumentation (3 CREDITS)

COURSE OBJECTIVES:

1. To make the student familiarize with the basics of experimental physics.
2. To make the student familiarize with the basics of electronics.
3. To enable the student to explore the concepts involved in the oscillators.
4. To allow the student to understand the fundamentals of instrumentals of instruments involved.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Basic Principles:

Measuring Instruments: Accuracy, precision, sensitivity and resolution; Scale, standards and calibration; Uncertainties of measurements and errors, propagation of errors, statistical treatment of random errors, Distribution functions their derivation and properties.

Unit 2 : Transducers:

Temperature, pressure/vacuum, magnetic field, vibration, strain, displacement and force transducers: Principle, construction and working.

Unit 3: Signal conditioning and recovery:

Signal level and impedance matching, Operational amplifier modules for different signal conditioning: addition, subtraction, scaling, differentiation and integration; Log and antilog amplifiers, analog multiplier and applications, instrumentation amplifier; Signal to noise considerations, Filters, Phase Lock Loop, Lockin amplifier.

Unit 4: Digital signal processing:

A/D and D/A convertor, T107 A/D convertor based DMM, Embedded systems: 8051 microcontroller (basic ideas only) Computer interfacing of science experiments.

Unit 5: Computer interfacing of Science Experiments:

Real time and Offline Data Processing, Data acquisition systems and Data Loggers: Principle and Design, Passive and Active Instrumentation with examples.

Course Outcome:

At the end of the course,

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1. The student should have had knowledge on the different experimental techniques.
2. The student should have understood the basics of physics involved in experiments.
3. The student should be able to apply the concepts of physics and do the interpretation and acquire the result.

Reference:

1. Measurement, Instrumentation and Experimental design in Physics and Engineering: Michael Sayer and Abhai Mansingh, Prentice Hall of India 2005
2. Data Reduction and Error Analysis for the Physical Sciences, P.R. Bevington and K.D. Robinson, McGraw Hill, 2003.
3. Electronic Instrumentation-H.S. Kalsi, TMH Publishing Co. Ltd. 1987.
4. Instrumentation Devices and Systems-C.S. Rangan, G.R. Sharma, V.S.V. Mani, 2nd Edition, Tata McGraw Hill, New.


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MPHYEC-10 Computational Methods (5 CREDITS)

COURSE OBJECTIVES:

1. To encourage students to "discover" Physics in a way how physics learn by doing research.
2. To address analytically intractable problems in physics using computational tools.
3. To enhance the various computational techniques with programming basic in C to face the world of problems using high performance iteration techniques.
4. To show how physics can be applied in a much broader context than discussed in traditional curriculum.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Introduction to Fortran/Python:

Algorithms, structured programming, Constants and variables, arithmetic expressions, input and output statements, Logical expression and conditional statements, iteration, functions, Arrays, Strings, I/O functions, Files.

Unit 2 : Data Interpretation and analysis:

Precision and accuracy, error analysis, propagation of errors, least square fitting: linear, polynomial and nonlinear regression, goodness of fit and chi square test, Elementary probability theory, random variables, binomial, poisson and normal distributions.

Unit 3: Finite difference methods:

Computer arithmetic, normalized floating point representation, its consequences and pitfalls; Methods of finding roots of equations: Bisection method, Newton-Raphson method, Successive Approximation method; Solution of simultaneous algebraic equations Gauss Elimination method, Gauss-Seidel iterative method.

Unit 4: Numerical Techniques:

Interpolation: Lagrange interpolation, Difference tables, Spline interpolation; Series approximation of functions: Taylor series, Numerical Differentiation, Numerical integration: Trapezoidal rule, Simpson's Rule, Numerical solution of Differential Equations: Euler's method, Runge-Kutta methods.

Unit 5: Some application of Numerical methods in Physics:

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- Signature: *Loganath* (bottom-right)
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Largest and smallest Eigenvalues, Diagonalisation of matrices, initial value problems, Simulation of simple physics problems, introduction to MATLAB/SCLAB/MATHEMATICA

Course Outcome:

At the end of the course,

1. Understand the basic idea about finding solutions using computational method basics.
2. Learn how to interpret and analyze data visually, both during and after computation.
3. Gain and ability to apply physical principal to real-world problems.
4. Acquire a working knowledge of basic research methodologies, data analysis and interpretation.
5. Realize the impact of physics in the global/societal context.

Reference:

1. Mathematical methods of physics- J. Mathews and R.L. Walker, Second Edition, Addison-Wesley.
2. Mathematical methods for Physicists - G.B. Arfken and H. Weber, Seventh Edition, Academic Press, 2012.
3. Introductory Methods of Numerical analysis S.S. Sastry, Third Edition, Prentice-Hall of India, 2003.
4. Programming in ANSI-C.E. Balaguruswamy, Second Edition, Tata McGraw Hill, 1992.

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MPHYEC-2H Nano Science (3 CREDITS)

COURSE OBJECTIVES:

1. The course is to understand the basic knowledge on nanoscience and nanotechnology.
2. Understand the various process techniques available of nanostructure materials.
3. Acquire the knowledge of various nano particles process methods.
4. To enhance the various analytical technique to understand the nano properties and characteristics of nano materials.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1: Introduction and Basic Principles:

Definition of Nanomaterials, Properties, Applications and Scope of Nano-Science, Quantum size effect, Electron confinement in infinitely deep square well, confinement in one and two dimensional well, idea of quantum well structure, Quantum wells, quantum wires and quantum Dots; Preparation and properties; conduction electrons and dimensionality, Properties dependent on density of states. Carbon nanostructures: Fullerenes, structure, Superconductivity in C60, Carbon nanotubes: synthesis and structure, Electrical and Mechanical properties, Graphene.

Unit 2: Synthesis:

Techniques for synthesis: Top down approach: Ball milling; Bottom up approach; Chemical methods of synthesis, R.F. Plasma and Pulsed Laser techniques Biological methods: synthesis using microorganisms, and plant extracts.

Unit 3: Characterization Techniques:

Characterization tools for nanomaterials: Thermal analysis: DTA, DSC, TGA, dilatometry; Electrical measurements: LCR meter, electrometer amplifier; Optical UV-Visible spectroscopy, IR spectroscopy Ellipsometry, Raman Photoluminescence and spectroscopy, Atomic absorption spectroscopy, Structural characterization: X-ray Diffractometer; Magnetic characterization: vibrating sample magnetometer; TEM, SEM, STM, AFM.

Unit 4: Magnetic Nanomaterials:

Magnetic nanoparticle, multiferroic and smart materials, Elementary idea of NEMS and nanotransistors.

Unit 5: Dielectric and Multiferroic materials:

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Theory of Dielectrics, Piezoelectricity, Ferroelectricity, Anti-Ferroelectricity and their application, Nano-structured Ferroelectric materials, Synthesis and Characterization, Techniques of Ferroelectric nano-materials, multiferroic and smart materials.

Course Outcome:

At the end of the course, students will be able to

1. Basic knowledge of Nanoscience and nanotechnology.
2. Under the basic idea about the nano structure.
3. Impart the knowledge about the properties and characteristics techniques of nano materials.
4. Understand the applications of nanomaterials.

Reference:

1. Nanostructure and Nanomaterials, synthesis properties and application, 2nd Edition, Author by Guozhong Cao & yingwang, Published by world scientific published, printed in 2004 Singapore.
2. Hand book of Nanotechnology, 3rd edition Author by Shusha, Published in springer, printed 2004 German.
3. Nanostructure materials, progressing, properties and potential application, 2nd Edition, Author by Carl C. Koch, Published by William Andrew publications, printed in 2007 US.
4. Nanomaterials, synthesis, properties and applications 2nd Edition, Author by A.S. Edelstein, Published by institute of physics publishing Bristol and Philadelphia, printed in 2000 U.K.


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COURSE OBJECTIVES:

- To expose the students to theory related to motion of charge particle in inhomogeneous field, production of plasma and usage of plasma.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Basics (Single Particle Approach):

Charged particles in uniform and non-uniform electromagnetic field, Plasma - the fourth state of matter, Concept of electron and ion temperature, Debye Length, Cyclotron Frequency, Larmor radius, Drift velocity of guiding center, Magnetic moment Magnetic mirror systems and their relation to the plasma confinement, Adiabatic invariants.

Unit 2 : Magneto Hydro Dynamics (Fluid Approach):

Introduction to ideal MHD systems, Fundamental equations of magneto hydrodynamic systems, Diffusion and mobility of charged particles in plasma, Plasma as fluid and MHD equations. Approximations and linearization of MHD from dimensional considerations, Single fluid MHD equation, MHD Generator.

Unit 3 : Waves and instabilities in plasma:

Waves in unmagnetised plasma, Energy transport, Ion acoustic waves and MHD waves, Issue of plasma stability and the use of normal mode to analyze stability, interaction between plasma particles, Perturbation at two fluid interface, Rayleigh Taylor instability, Kelvin Helmholtz instability and Jeans instability.

Unit 4 : Kinetic Theory:

Need for kinetic theory and MHD as approximation of kinetic theory, Meaning of $f(v)$, Phase space for many particle motion, Velocity and space distribution function, Derivation of fluid equation and Electron-ion plasma oscillation frequency, Derivation of Landau damping Equations of Kinetic Theory and Vlasov equations for fluid dynamics.

Unit 5 : Applications:

Saha's theory of thermal ionization, Application in Space Science, Controlled Thermonuclear Fusion, Magnetic reconnection, Dynamoaction.


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Course Outcome:

Students will have understanding of:

1. Theoretical method to study the charge particle motion.
2. Process to generate plasma in the laboratory.
3. Mechanism plasma production is helpful to make fusion reactors.

Reference:

1. A.R. Choudhary, The Physics of fluids and plasmas" (Cambridge, U.P. (1996).
2. Chery Francis Plasma Physics: II Edn (Plenum Press, 1984).
3. Bitten Court J.A. Fundamentals of Plasma Physics, (Pergamon Press, 1988).
4. Paul Hellan, of Fundamentals of Plasma Physics (CUP 2006).

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MPHYEC-1J Crystal Physics and X-Ray Crystallography (5 CREDITS)

COURSE OBJECTIVES:

Structural analysis is the first step in the characterization of any material. The atomic structure of a material depends on the method of synthesis and on various parameters involved in the technique.

This course will

1. Introduce the fundamental concepts of crystal structure.
2. To understand the diffraction principle and use of X-rays.
3. To understand the symmetry and space groups.
4. To know about lattice representation and reciprocal lattices.
5. To determine and analyse the crystal structure using x-ray diffraction.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1 : Geometry of Crystals:

Introduction, lattice, crystal systems, symmetry, primitive and non primitive cells, lattice directions and planes, unit cells of hcp and ccp structures constructing crystals, some simple ionic and covalent structures.

Unit 2 : Crystal Symmetry:

Bravais lattices, space groups and crystal structures, Symmetry of the fourteen Bravais lattices, coordination of Bravais lattice points, space filling polyhedral, thirty two crystal classes, centres and inversion axes of symmetry, crystal symmetry and properties, translation symmetry elements, Quasiperiodic crystals or crystalloids.

Unit 3: Lattice Representations:

Indexing lattice directions, lattice planes, miller indices, zones, zone axes, zone law, transforming miller indices and zone axes symbols, reciprocal lattice vectors, reciprocal lattice, unit cells, for cubic crystals, proof of some geometric relationships using reciprocal lattice vectors, Addition rule, Weiss zone law, d spacing of lattice planes.

Unit 4: X-Rays Diffraction:

Diffraction Bragg's law diffraction methods, scattering by electrons, atoms, unit cell, introduction to X-rays, electromagnetic radiation continuous spectrum, characteristic spectrum, absorption filters.

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production of X-rays, detection of X-rays, safety precautions, Contributions of Laue, Bragg and Ewald to X-ray diffraction Indexing of X-ray diffraction patterns.

Unit 3: Crystal Defects:

Representing crystals in projection, crystal planes, stacking faults and twins, stereographic projection. Point defects, line defects, planar faults, role of dislocations in Plastic deformation crystal growth, colorcenters.

Course Outcome:

Student would have understood

1. The structure of various crystals.
2. Know the theoretical framework like symmetry and space groups.
3. Know to characterize the crystal using X-ray diffraction experiments and
4. Also would be able to analyze the collected experimental data

Reference:

1. C. Hammond, The basics of Crystallography and diffraction, Oxford university press, New York (2009).
2. B.D. Cullity, elements of X-ray diffraction, Addison Wesley, Massachusetts (1956).
3. C. Suryanaryana, M.G. Norton, X-ray diffraction - A practical approach, Plenum press, New York (1998).
4. C. Kittel, introduction to solid state physics, 7th Ed., Wiley India, New Delhi (2004).

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MPHYEC-1K Energy Science (5 CREDITS)

COURSE OBJECTIVES:

This Course will

1. Enable the students to appreciate the importance of solar energy and renewable energies.
2. Provide an understanding of essential components of renewable energy applications and limitations.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit ($10 \times 2 = 20$). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them ($4 \times 5 = 20$). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them ($3 \times 10 = 30$).

Unit 1: Solar Energy: Fundamental and Material Aspects:

Fundamentals of photovoltaic Energy Conversion Physics and Material Properties, Basic to Photovoltaic Energy Conversion: Optical Properties of Solids, Direct and indirect transition semiconductors, interrelationship between absorption coefficients and band gap recombination of carries.

Unit 2: Solar Energy: Different Types of Solar Cells:

Types of Solar Cells, junction solar cell, Transport Equation, Current Density, Open circuit voltage and short circuit current, Brief description of single crystal silicon and organic Polymer Solar Cells, Elementary ideas of advanced Solar Cells e.g. Tandem Solar cells, Solid Liquid Junction Liquid Solar Cell, Nature of Semiconductor, Principles of Photo-electrochemical Solar Cells.

Unit 3: Hydrogen Energy: Fundamentals, Production and Storage:

Relevance in relation to depletion of fossil fuels and environmental consideration, Solar Hydrogen through Photoelectrolysis, Physics of material characteristics for production of Solar Hydrogen. Brief discussion of various storage techniques, special features of solid hydrogen Brief discussion of various storage processes, special features of solid hydrogen storage materials. Structural and electronic characteristics of storage materials. New storage Modes.

Unit 4: Solar thermal application and utilization:

Solar architecture, solar water heating, solar dryer, solar distillation, solar thermal-electric production, solarconcentrator.

Unit 5: Other Renewable clean energies.:

Elements of wind energy and Ocean Energy and Ocean Thermal Energy Conversion.

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S.R.A. SOLAR UNIVERSITY
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Course Outcome:

The students will be able to

1. Understand the importance of solar energy and renewable energies.
2. Understand essential components of renewable energy applications and limitations.
3. Design renewable energy systems as requirements.
4. Contribute towards reduction of our dependence on conventional energy sources.

Reference:

1. Kreith and Kreider, Principles of Solar Engineering, McGraw Hill Pub.
2. A.B. Meinel and A.P. Meinel, Applied Solar Energy.
3. M.P. Agarwal, Solar Energy, S. Chand & Co.
4. S.P. Sukhatme, Solar energy, T.M.H.
5. G.D. Rai, Non-conventional Energy sources, Khanna Publication, Delhi.

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Muzaffarpur-812001

Unit 1: Introduction of Environmental Physics

Structure and components of the atmosphere, composition and greenhouse effect, Wind speed of health, energy and temperature, relative humidity and capacity of atmosphere, cloud and weather, hydrostatic equilibrium, barometric formula of the atmosphere, dynamics of weather and change of state.

Unit 2: Solar and Environmental Radiation

Physics of reflection, transmission of light with matter, Rayleigh and Jello scattering, Law of Malus, Brewster's law, Thomson, Compton's law, Wien's displacement law, Rayleigh-Jeans and Wien's law, Stefan-Boltzmann, Wien's displacement law, Planck's energy balance of earth atmosphere system.

Unit 3: Environmental Pollution and Degradation

Atmospheric Poll: Aerosols, Gaseous, Particulate and Toxicant, Air quality, Factors governing air, water and noise pollution, Air and water quality standards, Water Quality, Acid Rain, Global Warming, Green House, Ozone and ozone depletion, CFCs and greenhouse effect and particulate pollution, Wet and dry deposition.

Unit 4: Environmental Change and Aerosol loading

Energy balance and atmospheric absorption, Temperature structure of atmosphere, Troposphere, Stratosphere, Mesosphere, Thermosphere, Ionosphere, Solar constant, Solar constant variation, Solar activity and solar cycle.

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MPWEC-1L Environmental Physics (5 CREDITS)

COURSE OBJECTIVES:

This course will

1. Enable the students to learn the concepts of sustainable development and coexistence with nature.
2. Enable the students to gain abilities to reduce environmental pollution.
3. Enable the students to understand the source of solar and terrestrial radiation.
4. Enable the students realize the hazards associated with depleting Ozone layer, and the factors responsible for the depletion of Ozone layer.
5. Enable the students to understand the importance of trees.
6. Enable the students to realize the importance of renewable energy sources like solar, wind and biogas.

The end Semester Examination will be of 3 hour duration and will carry 70 marks. The Question paper will be divided into three parts A, B and C. Part A will have ten compulsory questions (multiple choice type) covering the whole syllabus with two from each unit (10 x 2 = 20). Part B will have five short answer questions, with one question from each unit. The student is required to answer any four out of them (4 x 5 = 20). Part C will have five long answer question with one question from each unit. The student is required to answer any three out of them (3 x 10 = 30).

Unit 1 : Essentials of Environmental Physics:

Structure and thermodynamics of the atmosphere, composition of air, Greenhouse effect, Transport of matter, energy and momentum in nature, Stratification and stability of atmosphere, Laws and motion, hydrostatic equilibrium, General circulation of the tropics. Elements of weather and climate of India.

Unit 2 : Solar and terrestrial Radiation:

Physics of radiation, interaction of light with matter, Rayleigh and Mie scattering, Laws of radiation (Kirchoff's law, Planck's Law, Beer's law, Wien's displacement law, etc.) Solar and terrestrial spectra, UV radiation, Ozone depletion problem, IR absorption energy balance of earth atmosphere system.

Unit 3: Environmental pollution and degradation:

Elementary fluid dynamics, Diffusion, Turbulence and Turbulent diffusion, Factors governing air, water and noise pollution. Air and water quality standards. Waste disposal, Heat island effect, Land and sea breeze, Puffs and plumes, Gaseous and particulate matters, Wet and dry deposition.

Unit 4: Environmental Changes and Remote Sensing:

Energy sources and combustion processes, Renewable sources of energy, Solar energy, wind energy, bioenergy, Hydropower, Fuel cells, nuclear energy, Forestry and bio-energy.

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University Department of Physics
S.R.A. SOBAR UNIVERSITY
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Unit 5: Global and Regional Climate:

Elements of weather and climate, Stability and vertical motion of air, Horizontal motion of air and water, Pressure gradient forces, Viscous forces, Inertia forces, Reynolds number, Enhanced Greenhouse effect, Energy balance a zero-dimensional Greenhouse model.

Course Outcome:

The students will be able to

1. Understand the importance of basics of environmental processes.
2. Get opportunities of working metrological stations and even Establish metrological stations in remote places for better future.
3. Develop his/her understanding of global and regional climate change.

Reference:

1. Egbert Bocker and Rienk Van Groundelle, Environmental Physics John Wiley.
2. J.T. Houghton, The Physics of atmosphere, Cambridge University Press, 1977.
3. J. Twidell and J. Weir, Renewable energy resources, Ellis, 1988.
4. R.N. Keshavamurthy and M. Shankar Rao, The physics of monsoons, Allied publishers, 1992.
5. G.J. Haltiner and R.T. Williams, Numerical weather prediction, John Wiley, 1980.

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Head
University Department of Physics
B.R.A. BHAR UNIVERSITY
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B. B. A. BIHAR UNIVERSITY, MUZAFFARPUR

University Department of Political Science

Courses of Study

M.A. Political Science under Choice Based Credit System
With effect from 2018-19

Post Graduate Board of Studies, Political Science

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25/03/19
Professor & Head
Department of Political Science
B.B.A. Bihar University
Muzaffarpur

Babasaheb Bhimrao Ambedkar Bihar University, Muzaffarpur

**Two year (four semesters) Master of Arts (M.A.) Course in Political Science [M.A. (POL)]
in the Faculty of Social Sciences under Choice Based Credit System (CBCS)
(With effect from Academic Session 2018-19)**

Excerpts from the Ordinance and Regulations:

1. The duration of the M.A. (Political Science) Semester System shall be of four semesters spread over two academic years. Each semester shall be of ninety working days.
2. Each academic session shall consist of two semesters: I and III from July to December and II and IV from January to June.
3. The M.A. Political Science course (MPOL) shall consist of 20 Papers spread over four semesters consisting of Core Courses (CC), Elective Courses (EC), Discipline Specific Courses (DSE), Ability Enhancement Courses (AEC), Ability Enhancement Compulsory Courses (AECC) and Generic Elective (GE) Courses.
4. There shall be five courses/papers in first semester [CC 1,2,3,4 and AECC 1], six courses/papers in second semester [CC 5, 6, 7, 8, 9 and AEC 1], six courses/papers in third semester [CC 10,11,12,13, 14 and AECC 2] and three courses/papers in fourth semester [two EC papers chosen by the student and one GE or DSE course chosen by the student], each course carrying 100 marks.
5. Four elective papers: one AEC, two AECC and one DSE or GE papers will be qualifying in nature. A student shall not be considered pass and eligible for the award of the final degree unless he/she obtains minimum qualifying marks in these four papers as shown in table below.
6. The entire curriculum shall be of 2000 marks taken together. However, the CGPA shall be awarded on the performance of the candidate in 16 papers, which includes the 14 core course (CC) papers and two elective course (EC) papers having an aggregate of 1600 marks.
7. Core Course (CC): A course which should compulsorily be studied by a candidate as a core requirement based on the subject of M.A. studies and is termed as a Core Course.
8. Elective Course (EC): Two courses can be chosen from a pool of courses offered by the Department of Political Science. Students have to choose two Elective Courses in Semester IV.
9. Discipline Specific Elective course (DSE): Elective course offered by the Department of Political Science in Semester IV.
10. Ability Enhancement Courses (AEC)/ Skill Enhancement Courses (SEC) [Qualifying and non-CGPA Course] are based upon the content that leads to life skill enhancement. Following three courses have been selected by the University. Students can choose any of these in Semester II
 - a) Computer & IT Skills
 - b) Life Skill and Skill development
 - c) Yoga Studies

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11. Ability Enhancement Compulsory Course— Qualifying and Non - CGPA course

The Following AECC would be run by the university:

AECC 1: Environmental Sustainability (3 Credits) Swachhha Bharat Abhiyan Activities (2 credits) in Semester I

AECC 2: Human Values & Professional Ethics (C Credits) & Gender Sensitization (2 credits) in Semester III

12. Generic Elective (GE): An Elective course (Qualifying and non-CGPA Course) chosen generally from an unrelated discipline. The university is offering Human Rights as GE-1 in Semester IV.

Structure of the 2 years (Four Semesters) Post Graduate Degree Course in Political Science (MPOL) under CBCS

Table 1

Sem.	No. of Courses	Credit per Course	Total Credit	Minimum no. of Learning Hours	No. of Core Courses	No. of Elective Courses	Code & Nature of Elective Course
I	05	05	25	250	4	1	AECC-1
Semester Break							
II	06	05	30	300	5	1	AEC-1
Semester Break							
III	06	05	30	300	5	1	AECC-2
Semester Break							
IV	03	05	15	150	0	3	EC-1, EC-2, DSE-1 or GE-1
Total	20		100	1000	14	6	

Table 2: Description of papers for MA. degree in Political Science under CBCS

Semester	Course/ Paper Code	Nature of Course/ Paper	Marks	Marks of CIA	Marks of ESE	Passing Criterion	Qualifying Criterion
Semester I	MPOL CC-1	Western Political Thought	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-2	Political Institutions and Practices in India	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-3	Comparative Politics: Concepts and Models	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA

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Professor & Head
Department of Political Science
B.A. Four Semesters
University

	MPOL CC-4	International Relations: Theories and Approaches	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL AEC-1	Environmental Sustainability (3 credits) & Swachhata Bharat Abhiyan (2 credits)	100	30	50	45% in CIA 45% in ESE	Qualifying
Semester II	MPOL CC-5	Introduction To Public Administration	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-6	Foreign Policy of Major Powers	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-7	Contemporary Issues in International Relations	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-8	Indian Political Thought	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-9	Political Processes and Governance in India	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL AEC-1	Computers and IT Skill/ Life Skill & Skill development/ Yoga Studies	100	50	50	45% in CIA 45% in ESE	Qualifying
Semester III	MPOL CC-10	Political Theory	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-11	Research Methodology	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA

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	MPOL CC-12	State Politics in India with special reference to Bihar	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-13	India's Foreign Policy	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL CC-14	Political and Social Movements	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL AECC-2	Human Values & Professional Ethics (3 credits) & Gender Sensitization (2 credits)	100	50	50	45% in CIA 45% in ESE	Qualifying
Semester IV	MPOL EC-1	Indian Administrative System	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL EC-2	Introduction to International Law	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL EC-3	Administrative Theory	100	30	70	45% in CIA 45% in ESE	Marks decide class / CGPA
	MPOL EC-4	International Organization	100	30	70	45% in CIA 45% in ESE	Marks decide class/ CGPA
	MPOL DSE-1	Local Government	100	30	70	45% in CIA, 45% in ESE	Qualifying
	MPOL GE-2	Human Rights	100	30	70	45% in CIA 45% in ESE	Qualifying

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Dr
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Dr. Ravi
25-05-19

Dr. Ravi
25/5/2019
Professor & Head
Department of Political Science
B.A. Bihar University
Muzaffarpur

Admission to M.A. Part I First Semester (Political Science): A candidate seeking admission must be a graduate having passed the Bachelor Degree (B.A.) with Honours (45%) in Political Science or as subsidiary subject with 55% marks or as a subject in pass course with 55% marks or in an allied subject with 55% marks. Preference will be given to those having passed with the subject as Honours/Major subject/Core course. Admission shall be made in order of merit. The merit list shall be prepared on the basis of marks obtained by the applicant in the Bachelor Degree Course. Reservation of seats shall be in accordance with reservation rules of the Government of Bihar. Reservation for following categories in accordance with the regulations shall be over and above the normal sanctioned strength of the subject: NCC-C certificate holders, NSS certificate holders representing the University/ State, applications who have represented University/ State and distinguished themselves in different disciplines of the in fine arts, ward of military personnel/ wards of teachers and non-teaching staff.

No student shall be allowed to register for any other degree course in this University or any other University during the same academic session of his/her study of M.A. in Political Science under the faculty of Social Sciences.

The medium of instruction for teaching-learning and examination will be Hindi/English.

Table: Fee Structure per Semester for M.A. in Political Science

1. Admission Fee (per semester): Rs.150/-
2. Registration fee (one time, if applicable): Rs. 200/-
3. Caution Money (one time): Rs. 500/-
4. Tuition Fee (per semester): Rs. 150/-
5. Ekavya/Tarang(One time in each academic session): Rs. 10/-
Total: Rs. 1010/-

Miscellaneous (Per Semester):

1. Central Library: Rs. 100/-
2. Electricity Fee: Rs. 300/-
3. Identity Card Fee: Rs.60/-
4. NSS Fee: Rs.50/-
5. Parking: Rs. 50/-
6. Internal Examination Fee: Rs.300/-
7. Library Maintenance Fund: Rs.100/-
8. Building Maintenance Fund: Rs. 100/-
9. Medical Fee: Rs. 100/-
10. Athletic Fund for PG: Rs. 100/-
11. Athletic Fund for University: Rs. 100/-
12. Common Room Fund: Rs.50/-
13. Extra-curricular Fee (Cultural): Rs. 50/-

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UNIVERSITY OF BIHAR
B.A. POLITICAL SCIENCE
M.A. PART I SEMESTER I

- 14. Environmental Protection Fee: Rs.20/-
 - 15. Students' Welfare Fee: Rs.10/-
 - 16. Poor Students' Fund: Rs. 10/-
 - 17. Students' Union Fund: Rs.100/-
 - 18. Society Subscription: Rs.50/-
 - 19. Magazine Fund: Rs.50/-
 - 20. Hand Book/ Directory: Rs.50/-
- Total amount in First Semester: Rs. 2560/-
- Total amount in subsequent semesters excluding caution money and Registration Charges: Rs. 2060/-
- Field work, wherever applicable (one time): Rs. 1000/-

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Professor B. Hood
Head, Dept. of Postgrad. Stud.
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Courses of Study (with effect from 2018-19)

M.A. SEMESTER I

Course Code MPOLCC-1 Paper I: Western Political Thought

- Unit 1
1. Plato
 2. Aristotle
- Unit 2
3. Machiavelli
 4. Hobbes
 5. Locke
 6. Rousseau
- Unit 3
7. Hegel
 8. John Stuart Mill
- Unit 4
9. Karl Marx
- Unit-5
10. Gramsci
 11. Hannah Arendt

Reading List:

1. William A. Dunning, *History of Political Theory*, Central Book Depot, Allahabad, 1970
2. George H. Sabine, *History of Political Thought*, Oxford, New Delhi, 1970
3. C.L. Wayer, *Political Thought*, B. I. Publications, Bombay, 1975
4. Ernest Barker, *Greek Political Theory: Plato and his Predecessors*, London, 1967
5. Sriprakash Mani Tripathi, *Sanskrit Rajnitī Chintan*, Raj Publications, Daryaganj, Delhi, 3rd edition, 2016
6. Subrata Mukherjee and Sushila Ramaswamy, *A History of Political Thought: Plato to Marx*, 2nd edition, 2013, PHI Learning, New Delhi
7. Braj Kishore Jha, *Prasasti Rajnitī Chintan*, Bihar Hindi Grantha Academy, Patna

Paper II Paper Code: MPOLCC-2
Political Institutions and Practices in India

Unit 1

1. Making of the Indian Constitution: Colonial Heritage and the Contribution
2. Constituent Assembly: Composition, Ideological Moorings and Working

Unit-2

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3. Philosophy of the Constitution: Preamble, Fundamental Rights and Directive Principles of State Policy
4. Constitutional Amendments: Process, Amendment as an instrument of social change, Basic Structure Debate

Unit-3

5. Nature and Prospects of Federalism; Its working with reference to Centre- State relations, Emerging Trends

Unit-4

6. Union Executive: President, Prime Minister and Council of Ministers
7. Union Parliament: Structure, Role and Functioning, Parliamentary Committees
8. Judiciary: Supreme Court, High Courts, Judicial Review, Judicial Activism, Judicial Reforms

Unit-5

9. Executive and Legislature in the States: Governor, Chief Minister, State Legislature
10. Electoral Process and Election Commission of India: Conduct of Elections, Electoral Reforms

Reading List:

1. D.D. Bass, *Introduction to the Constitution of India*
2. B. D. Dua, M P Singh and Rekha Saxena (eds), *Indian Judiciary and Politics: Changing Landscape*, Manohar, Delhi, 2006
3. B D Dua and M P Singh (eds), *Federalism in the New Millennium*, Manohar, Delhi, 2003
4. B. Shiva Rao, *The Framing of India's Constitution: A Study and Select Documents*, Tripathi, Bombay 1968
5. G. Austin, *Working of a Democratic Constitution: The Indian Experience*
6. Bidyut Chakrabarty and Rajendra Kumar Pandey, *Indian Government and Politics*, Sage, 2008
7. Neeta Gopal Jajal and Pratap Bhana Mehta (eds) *The Oxford Companion to Politics of India*, 2011
8. Bidyut Chakrabarty, *Indian Constitution: Text, Context and Interpretation*, Sage, 2017
9. Lloyd and Susanne Rudolph, *Explaining Indian Democracy: A Fifty Year Perspective, 1950-2006*, Volumes I-III, Oxford University Press, 2008
10. Zoya Hasan, E. Sridharan and R. Sudarshan (eds), *India's Living Constitution: Ideas, Practices, Controversies*, Permanent Black, New Delhi, 2002

Paper Code: MPOLCC-3

Paper III Comparative Politics: Concepts and Models

Unit-1

1. Comparative Method in the study of Political Systems – Approaches : Political Sociology, Political Economy and Structural-Functionalism

Unit-2

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25-03-19

Professor B. N. Mehta
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B.A. Honours
Muzumdar

2. Political Socialization, Political Culture, Political Participation and Social Mobilization, Political Development and Modernization

Unit-3

3. The American and British Political System

Unit-4

4. The French and Swiss Political System

Unit-5

5. The Chinese Political System

Reading List:

1. Gabriel A. Almond and J.S. Coleman, *The Politics of Developing Areas*, Princeton N.J., Princeton University Press, 1960
2. G.A. Almond and Sidney Verba, *Civic Culture: Political Attitudes and Democracy in Five Nations*, Princeton N.J., Princeton University Press, 1963
3. Sidney Verba (ed), *Civic Culture: Revisited*, Boston, Little Brown, 1989
4. G.A. Almond and G.B. Powell, *Comparative Politics: A Developmental Approach*, Boston, Little Brown, 1966
5. G.A. Almond and G.B. Powell, *Comparative Politics Today*, 7th Edition, Harper Collins, 2000
6. David E. Apter, *The Politics of Modernization*, Chicago, Chicago University Press, 1965
7. Paul Baran, *The Political Economy of Growth*, New York Monthly Review Press, 1957
8. A. Bebler and J. Seroka (eds), *Contemporary Political Systems: Classifications and Typologies*, Boulder Colorado, Lynne Rienner Publishers, 1990
9. Samuel P. Huntington, *Political Order in Changing Societies*, New Haven CT, Yale University Press, 1968
10. E. C. Macridis, *The Study of Comparative Government*, 1955
11. Herman Finer, *Theory and Practice of Modern Government*, 1952
12. Carl J. Friedrich, *Constitutional Government and Democracy: Theory and Practice in Europe and America*, 1950
13. Todd Landman, *Issues and Methods in Comparative Politics: An Introduction*

Paper Code MPOLCC-4 Paper IV: International Relations: Theories and Approaches

Unit-1

1. Development of the study International Relations
2. International Relations: Meaning and Significance

Unit-2

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- Approaches: Idealism, Realism, Neo-Realism, Neo-Liberalism, Systems and Decision Making Theories

Unit-2

- Conflicts and Peace: Changing Nature of Warfare, Weapons of Mass Destruction, Conflict Resolution
- Disarmament and Arms Control : CTBT, NPT

Unit-4

- The concept of Power: its Constituents and Limitations; Security, State and State System, Non-State actors
- The Management of Power: Balance of Power, Collective Security, Changing Dimension of National Power

Unit-5

- Regional Organizations – Past Performance and Future Prospects: SAARC, ASEAN, European Union, BRICS and Shanghai Cooperation Organization, African Union

Reading List:

- "Thinking Theory Thoroughly" in James N. Rosenau, *The Scientific Study of Foreign Policy*, 1980, pp.19-31
- Mahendra Kumar, *Theoretical Aspects of International Politics*, 1972
- Hans J. Morganthau, *Politics Among Nations*, chapters 1,2,3, and 4, Scientific Book Agency, Kolkata, 1976
- Robert O. Keohane and Joseph S. Nye Jr., *Realism and Complex Interdependence*, in *Power and Interdependence: World Politics in Transition*, Brown & Company, 1977, pp.3-5,8-11, 22-37
- Robert Sorenson and Georg Jackson, *Introduction to International Relations*, 5th edition, Pearson, 2017
- Peu Ghosh, *International Relations*, 4th edition, PHI
- V.N. Khanna, *Antarastriya Sambandh* (Hindi)
- Barry Buzan, *Regions and Power: The Structure of International Security*
- Kenneth W. Waltz, *Theory of International Politics*
- Kenneth W. Waltz, *Man, The State and War: A Theoretical Analysis*
- Joseph S. Nye Jr., *Soft Power: The Means to Success in World Politics*
- Stephan M. Walt, *The Collapse of the Liberal Order* (2016)
- John J. Mearsheimer and Stephen M. Walt, *The Case for Offshore Balancing*, Foreign Affairs
- Carl Von Clausewitz, *On War*, Oxford University Press
- Wolfgang Zank (ed), *Clash or Cooperation of Civilizations: Overlapping Integration and Identities*

Aranya
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Aranya
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Professor & Head
Dept. of Political Sci
B.A. Bihar University
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MPOI, AECC- I (Ability Enhancement Compulsory Course)

A. Environmental Sustainability (2 credits) & B. Swachha Bharat Abhiyan (2 credits)

Each credit requires 10 hours of teaching-learning for theory and 20 hours for practical assignments and field work.

A. Environmental Sustainability

Unit- 1

Environmental Ethics and Ecosystem: Concept of Sustainable Development with reference to Human Values in Western and Indian Perspectives; Sustainable Development and Conservation of Natural Resources (Nature, Factors, Structure, Development and People's Participation); Development Environment – Rural and Urban, Concept of Ecosystem

Unit-2

Development and its effects on Environment: Environmental Pollution—Water, Air, Sound etc due to Urbanization and Industrial Civilization; Concept of Global Warming, Climate Change, Green House Effect, Acid Rain, Ozone Layer Depletion; Menace of Encroachment of Exotic Plants, particularly Parthenium and Trees with special reference to impact on habits and habitat of Indigenous Flora and Fauna

Unit-3

Concept of Bio-diversity and its conservation: Environmental Degradation and conservation; Government policies, Social Effects and role of Social Reforms in this Direction, Role of Science in Conservation of Environment; Concept of three R (Reduce, Reuse, Recycle), Need of Education and Awareness Programmes and Ecological Economics

B. Swachha Bharat Abhiyan Activities (2 credits)

Unit-4

Swachha Bharat Abhiyan: The concept of Swachhata as personal, Gandhian approach towards social and environmental moral values, A concept of Swachhata and its relation to Moral Upgradation of society and Freedom Struggle, Awareness Programmes related to Swachhata, Role of Swachhagrahis in Swachha Bharat Abhiyan

Sanitation and Hygiene, Why Sanitation is needed? Sanitation and Human Rights, Plantation, Value of Nature, Concept of Community Participation and Role of State Agencies, Case Study of Sanitation, effects of Cleanliness, Diseases- Infection and Vector-borne, Idea of spread of diseases through body and other biological fluids and excreta

Unit-5

Assignment/Practical/ Field work based on Unit-4

Alternative to Units 4 and 5, a student can enrol for Swachha Bharat Internship Programme of Ministry of Human Resource Development

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SEMESTER II
MPOLECC-8 Paper V

Introduction to Public Administration

Unit-1

1. Introduction: Meaning, Nature and Scope
2. Evolution of Public Administration as a Discipline and its Present Status

Unit-2

3. Theories and Principles of Organization: Administrative Management: Henri Fayol and His successors.
4. Scientific Management: F.W. Taylor

Unit-3

5. Bureaucratic Theory: Weber
6. Human Relation Theory: Elton Mayo
7. Chester Barnard

Unit-4

8. Theories of Communication and Leadership
9. Morale and Motivation: Maslow, Herzberg and McGregor
10. Managing Conflicts in Organization: Mary Parker Follet

Unit-5

11. Rational Decision Making Approach: Herbert Simon
12. Ecological Approach: Fred Riggs
13. Management by Objectives: Peter Drucker

Reading List:

1. S.R. Maheshwari, *Administrative Thinkers*, Macmillan India Ltd
2. S.R. Maheshwari, *Administrative Theory: An Introduction*, Macmillan India Ltd
3. Ramki Basu, *Public Administration: Concepts and Theories*, Sterling Publishers Pvt Ltd
4. Mohit Bhattacharya, *Public Administration: Structure, Process and Behaviour*, The World Press Pvt Ltd
5. P.G. Das, *Fundamentals of Public Administration*, New Central Book Agency (P) Ltd
6. Ramesh K. Arora (ed.), *Indian Administration: Perceptions and Perspectives*, Aalekh Publishers
7. Alka Dhameja (ed.), *Contemporary Debates in Public Administration*, PHI Learning Private Limited
8. David H. Rosenbloom, Robert S. Krashuk, *Public Administration: Understanding Management, Politics, and Law in the Public Sector*, McGraw-Hill
9. R.K. Sapsa, *Public Policy: Art and Craft of Policy Analysis*, PHI Learning Private Limited
10. Bidyut Chakrabarty, Mohit Bhattacharya (eds.), *Administrative Change and Innovation: A Reader*, Oxford University Press

Accepted
25/11/2019

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Signature & Stamp
Name: Dept. of Political Science
B.A. Bihar University
Madhubani

11. Bidyut Chakrabarty, Mohit Bhattacharya (eds.), *Public Administration: A Reader*, Oxford University Press
12. Hugh T. Miller, Charles J. Fox, *Postmodern Public Administration*, PHI Learning Private Limited
13. Richard C. Bos, *Critical Social Theory in Public Administration*, PHI Learning Private Limited
14. M. Laxmikant, *Lok Prashasan*, TMH

MPOL CC-6 Paper – VI Foreign Policy of Major Powers

Unit-1

1. Foreign Policy of the United States of America – Unilateralism, Unipolar World System,

Unit-2

2. Foreign Policy of USSR/Russia – Cold War and Post-Cold War Developments

Unit-3

3. Foreign Policy of China – Rising Super Power, Energy Security

Unit-4

4. Foreign Policy of Britain – Special Relationship with the U.S., Reluctant Role in European Union

Unit-5

5. Foreign Policies of France and Germany

Reading List:

1. George M. Goss, *The Politics of United States Foreign Aid*, Routledge
2. Barry R. Posen, *Restraint: A New Foundation for U.S. Grand Strategy*, Cornell University Press
3. Michael B. Swaine and Ashley Tellis, *Interpreting China's Grand Strategy: Past, Present and Future*, Rand
4. Luis Sindiin, *Geopolitical Change, Grand Strategy and European Security: The EU-NATO Consensus in Perspective*
5. Edward N. Luttwak, *The Rise of China vs. The Logic of Strategy*
6. Colin Duack, *The Obama Doctrine: American Grand Strategy*

MPOLCC-7 Paper VIII Contemporary Issues in International Politics

Unit-1

1. Cold War: Origin, Evolution, Second Cold War
2. Factors leading to the end of the Cold War and Post-Cold War Issues

Unit-2

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27/3/2019

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3. Political Economy of International Relations: Globalization– Meaning Broad Features, Implications for International Relations
 4. International Trade and Commerce: World Trade Organization, G-20, Trade Negotiations
- Unit-3**
5. Development Issues: Bretton Woods System: IMF and World Bank, Issues between North and South, North-South Dialogue
 6. Climate Change and Environmental concerns, IPCC negotiations
- Unit-4**
7. International Terrorism and Democratic Expansion
 8. Human Rights
- Unit-5**
9. Emerging Issues: Ethnic Resurgence or Identity Wars
 10. Emerging Issues: Humanitarian Intervention and Displacement of Population

Reading List:

1. Thomas R. Mockaitis and Paul B. Rich (eds), *Grand Strategy in War against Terrorism*

MPOLCC-8 Paper VIII Indian Political Thought

Unit-1

1. Overview of Indian Political Thought: Genesis and Development.
2. Shantiparva (Mahabharat) - Rajadharma.

Unit-2

3. Kautilya's Arthashastra - Kingship, Saptaanga Theory and Mandala theory.

Unit-3

4. The Indian Renaissance - Ram Mohan Roy and Swami Vivekanand
5. The Indian Nationalism - B. G. Tilak and M.K. Gandhi

Unit-4

6. Social and Political Thought of Sri Aurobindo and M.N. Roy
7. Social and Political Thought of J. L. Nehru, Ram Manohar Lohia and Jaya Prakash Narayan

Unit-5

8. Critique of the Caste System - E.V. Ramasamy Periyar and B. R. Ambedkar
9. Social and Political Thought of V. D. Savarkar and Deen Dayal Upadhyaya

Reading List:

1. Bidyut Chakrabarty and Rajendra Kumar Pandey, *Modern Indian Political Thought: Text and Context*, Sage, New Delhi
2. M.P. Singh and Himanshu Roy, *Indian Political Thought: Themes and Thinkers*, Pearson, New Delhi, 2017
3. K.S. Padhy, *Indian Political Thought*, Prentice Hall India, Eastern Economy Edition, 2011
4. A. Appadorai, *Indian Political Thought in the 20th Century*, 2nd edition, South Asian Publishers, 1987

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 Public Administration
 Bangalore

MPOLCC-9 Paper 9 Political Processes and Governance in India

Unit-1

1. Socio-cultural and Philosophical Bases of Indian Politics

Unit-2

2. Party System: National and Regional Political Parties, Ideological and Social Bases of Political Parties, Pattern of Coalition Politics
3. Pressure Groups

Unit-3

4. Voting Behaviour: Determinants, Changing Socio-economic Profile of Legislators
5. Electoral Politics in different phases: (i) up to 1967 (ii) 1967-1977 (iii) 1977-1980-89 (iv) 1989-2014 (v) 2014 onwards

Unit-4

6. Identity Politics: Religion, Tribe, Caste, Region and Languages
7. Gender and Politics in India: Issues of Equality and Representation, Role of women in the Political Process

Unit-5

8. State, Economy and Development: Nature of Indian State, Development Planning Model, New Economic Policy, Growth and Human Development
9. Process of Globalization: Social and Economic Implications

Reading List:

1. Ramashray Roy and Paul Wallace, *Indian Politics and 1998 Elections*, Sage, 2000
2. Paul Wallace and Ramashray Roy, *India's 1999 Elections and Twentieth Century Politics*, Sage, 2003
3. Ramashray Roy and Paul Wallace, *India's 2004 Elections: Grassroots and National Perspectives*, Sage, 2009
4. Paul Wallace and Ramashray Roy, *India's 2009 Elections: Coalition Politics, Party Competition and Congress Continuity*, Sage, 2011
5. Ramashray Roy and Paul Wallace, *India's 2014 Elections: A Modi-led BJP Sweep*, Sage, 2015
6. Zoya Hasan, *Quest for Power: Oppositional Movements Post-Congress Politics in Uttar Pradesh*, Oxford University Press, 1998
7. Rajeev Bhargava (ed.), *Secularism and its Critics*, Oxford University Press, 1998
8. Peter Ronald d'Souza, E. Sridharan (eds.), *India's Political Parties*, Sage, 2006
9. Francis R. Frankel, et al. (eds.), *Transforming India: Social and Political Dynamics of Democracy*, Oxford University Press, 2000
10. Partha Chatterjee (ed.), *State and Politics in India*, Oxford University Press, 1998

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11. Katharine Adeney and Lawrence Sazs (eds.), *Coalition Politics and Hindu Nationalism*, Routledge, 2005
12. Sudipta Kaviraj (ed.), *Politics in India*, Oxford University Press, 1997
13. Zoya Hasan (ed.), *Politics and the State in India*, Sage, 2000
14. Prashant Jha, *How the BJP Wins: Inside India's Greatest Election Machine*, Juggernaut Books, 2017
15. M.N. Srinivas, *Caste: Its Twentieth Century Avatar*, Oxford University Press
16. M.N. Srinivas, *Caste in India and Other Essays*
17. Rajni Kohari (ed), *Caste in Indian Politics*, 1996
18. Christophe Jaffrelot, *Religion, Caste and Politics in India*, 2010
19. Ghanshyam Shah, *Caste and Democratic Politics in India*, 2004
20. Christophe Jaffrelot, *India's Silent Revolution: Rise of Lower Castes in North India*
21. Narayan Lakshman, *Patrons of the Poor: Caste Politics and Policymaking in India*, OUP
22. Bidyut Chakrabarty, *Coalition Politics in India*, OUP
23. Subrata K. Mitra, *Politics in India: Structures, Process and Policy*, 2014
24. Sanjay Ruparelia, *Divided We Govern: Coalition Politics in Modern India*, OUP, 2016
25. Devesh Kapur and Milan Vashwan (eds), *Costs of Democracy: Political Finance in India*, OUP, 2018

MPOL AEC-1

Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)

Course Code: AEC-1 or SEC-1, Credit 5 (There shall be 5 units each consisting of one credit)

Student can opt for any of the following courses: Computers & ICT, or Life and Communication Skill Development, or Yoga Sciences

Course title: Computers & ICT

Course Code: AEC-1 or SEC-1

Credits: 5 (There shall be 5 units each consisting of one credit)

Course Offered in: Semester-II

Course Content

Unit I

Basics of 'Computer System':

What is a Computer?

Computer System Components – Hardware and Software.

Introduction to the Terms- Motherboard, SMPS, Processor, RAM, ROM, Ports and Cards.

Broad overview of Different makes of these components, their availability in the market and their prices.

Unit II

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Basics of Operating System:

Introduction to Unix/Linux Operating System, Introduction to Windows Operating System, Basic Operations on Unix/Linux and Windows Operating Systems.

Unit III

Information Management: Document processing and e-Documentation using Word processor like Open Office, Statistical and Graphical Data Analysis using Spread Sheet and Statistical Packages, Data / Information Communication and Presentation using PowerPoint.

Unit IV

SSD (Special Skill Development) Detailed study on any one of the following three using Spoken Tutorial:

- a. Latex
- b. Accounting Software
- c. Spread sheet using Spoken tutorial
- d. Matlab/Scilab

Unit V

Networking Basic:- Network topologies, LAN, MAN, WAN, TCP/IP, Knowledge of Networking Hardware, Servers/Client Interface, Internet Connectivity

Unit VI

Assignment / Field Work based and Unit I, II, III and IV.

Or

Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)

Course title: Life and Communication Skill Development

Course Code: AEC-ISEC-1 Credit 5

(There shall be 5 units each consisting of one credit)

Course Description: Acquisition of life skills will empower students to cope with the transitive interactions in personal and professional lives while in an age of communication the curriculum will equip students to develop expertise in the utilities of ICT in the transmission of knowledge.

Course Objectives:

- 1. To develop communication skill of students.
- 2. To develop writing skill of students.
- 3. To develop expertise in the utilities of ICT in the transmission of knowledge.

Course content:

Unit	Topics
1	Life Skills: Critical Thinking, Aristotle's Law of Logic, Problem Solving, Creative Thinking

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- II Inter-personal Skills: Childhood Ethics, Coping with Emotions and Stress, Trustworthiness and Empathy, Negotiating Difference of Opinions
- III Communication skills: What is Communication?, Listening Skills, Speaking Skills, Reading Skills, Writing Skills, Group Discussion and Personal Interview, Barriers to Communication
- IV Specialized Writing Skills: Official Letters, Business Letters, Writing Agendas, Minutes, Reports, Writing CVs, Resume, Statement of Purpose, Sending Applications through mail with attachments, Rapporteurship, Documentation
- V Information and Communication Technology (ICT) Literacy: Word Processor, Excel, Page Maker, PDF conversion, Preparing Power Point Presentation

Learning outcomes:

After completion of the course students should be able to cope with the transitive interactions in personal and professional lives. The course will equip students to develop expertise in the utilities of ICT in the Transmission of knowledge.

Assignments: Assignment will be based on Unit I, II, III, IV and V

Or

Ability Enhancement Course (AEC)

Yogic Sciences

Unit-1

BASIC CONCEPT OF YOGA

1. Introduction to Yogic Definitions of Yoga, Thinkers on Yoga and their views: Patanjali, Gherand and; Goraksh; Karma Yoga, Bhakti Yoga and Gyan Yoga : Concept and Characteristics.
2. Raja Yoga: Eight steps of Yoga; Description and significance of Yamas and Niyamas.
3. Asanas and Pranayams : Methods, Advantages and Limitations; Concept of Prana and Nadis; The subtle body, Chakras.
4. Pratyahara and Dharana : Significance and Techniques; Pratyahara and Dharana - Yoga Nidra, Antar Mouna, Ajapa Jap;
5. Hath Yoga : Shaktikarnas their Methods, Benefits and Limitations
6. Body and Mind : Body-mind relation; the conscious, subconscious and unconscious; Psychosomatic disorders. of Yamas

Unit -2

APPLICATIONS OF YOGA

1. Yogic Lifestyle and Health : Medical Concept and Definition of Health, Causes of disease according to Medical Science and Yoga; Basic instincts and their management through Yoga;

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- Diet and Nutrition:** Medical and Yogic concept of diet; the three Gunas in relation to diet.
- Effect of Yoga on body systems:** The Bones and Joints, Cardiovascular, Respiratory, Digestive, Nervous, Endocrinal and Excretory Systems. Preventive, Promotive and Curative Effects of Yoga.
- Stress management:** Concept and types of stress, Effects of stress on body and mind, Yogic management techniques.
- Social Health management:** Causes and effects of crime and substance abuse on society, Role of yoga as supporting and transforming agent.

Unit 3 (practical)

- Pawanmuktasana – Part I, II and III
- Relaxation asanas – Shavasana, Advasana, Makarasana, Matsykrishasana.
- Meditative Asanas – Padmasana, Siddhasana, Siddhayantrasana, Sukhasana.
- Standing Asanas – Tadasana, Tiryaktadasana, Katichakrasana, Dwikonasana, Trikonasana.
- Vajrasana series – Vajrasana, Suptavajrasana, Singhasana, Shashankasana, Ustrasana, Vyaghrasana.
- Forward Bending Asanas – Paschimottasana, Janushirvana.
- Backward Bending Asanas – Bhujangasana, Tiryakbhujangasana, Shalabhasana, Dhanurasana, Chakrasana, Gomukhasana, Kandhasana

Unit 4 (practical)

- Gatyaत्मक Asanas – Suryanamaskar, Shashankprakshalana Asanas.
- Inverted Asanas – Bhujangapadmastasana, Sarvangasana, Halasana.
- Pranayama – Prepranayama Practices, Yogic Breathing, Nadishodhan up to stage III, Kapalabhati, Bhastrika, Dhrumari
- Mudras and Kriyas – Gyan, Chin, Shambhavi, Nasikagra, Ashwini, Khechari, Agniar
- Bandhas – Jalandhar, Moola, Uddiyana, Mahabandha
- Shatkarma – Karpal, Jalneti, Laghushankhaprakshalana, Trataka.
- Pratyahara – Yoganidra, Antarmasana, Ajapa.

Unit -5

Assignment/Vocational Training

(*1 units = 1 credit)

Unit 1+2 = 2 X 10 = 20 hrs

Units 3+4 (Practicals) = 2 X 20 = 40 hrs

Unit 5 (Vocational Training) = 10 X 2 = 20 hours

Total Programme Programme = 20+40+20 = 80 hours

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MA. (FINAL YEAR) SEMESTER III & IV

SEMESTER III

MPOLCC-10 PAPER X

POLITICAL THEORY

Unit-1

1. Political Theory: Nature and Significance, Decline and Resurgence of Political Theory
2. Behaviouralism and Post-Behaviouralism, Contemporary Debates in Political Theory

Unit-2

3. Justice: Conceptions of Justice with special reference to Rawls' theory of Justice and its Critiques
4. Libertarianism: Hayek and Nozick

Unit-3

5. Concepts: Liberty, Equality, Rights, Democracy, Power and Citizenship

Unit-4

6. Liberalism and Critique of Contemporary Liberalism: Macpherson
7. Crisis of Legitimacy and Public Sphere: J. Habermas
8. Conservatism – Oakeshott

Unit-5

9. Multiculturalism
10. Feminism
11. Post Modernism

Reading List:

1. Sushila Ramaswamy, *Political Theory: Ideas and Concepts*, Second Edition, Prentice Hall of India, Delhi, 2015
2. O.P.Gauba, *An Introduction to Political Theory*, 5th edition, Macmillan, Delhi, 2009
3. Rajeev Bhargava and Ashok Acharya, *Political Theory: An Introduction*, Pearson Longman, 2008

MPOLCC-11 Paper XI

Research Methodology

Unit-1

1. Nature and characteristics of Behavioural and Scientific Research
2. Philosophical, Historical, Legal-Institutional and Political Economy Approaches of Research

Unit-2

3. Identification of the problem of Research

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4. Concepts and Variables--Dependent, Independent, Antecedent and Intervening variables.

Unit-3

5. Hypothesis-- Nature, Types and Sources of Hypothesis; Characteristics of a testable hypothesis; Importance and Role of Hypothesis
6. Units of Analysis, Selecting a Sample – Concept, Principles, Types and Techniques

Unit-4

7. Literature Review: Reasons and How to conduct
8. Data Collection: Observation, Questionnaire and Interview.
9. Data Processing and Data Analysis: Statistical Techniques of Data Analysis

Unit-5

10. Use of Computer and ICT in Political Research.
11. Report Writing and Thesis Writing

Reading List:

1. J. B. Johnson and R.A. Joslyn, *Political Science Research Methods*
2. P.V. Young, *Scientific Social Survey and Research*
3. Shyam Lal Verma, *Kapiti Vigyan Shodh Padhdhai, Rajasthan Hindi Granth Academy*

MPOLCC-12 Paper 12

State Politics in India with Special Reference to Bihar

Unit-1

1. Theoretical Framework for the study of State Politics.
2. Socio-economic determinants of State Politics

Unit-2

3. Centre-State Political and Economic relationship Areas of Conflict
4. Coalition-Alliance Politics and Governance in States with special reference to Bihar

Unit-3

5. Regional Political Parties and its linkages with National Parties and the Federal setup.
6. Impact of national politics on State Politics

Unit-4

7. Patterns of State Politics in India
8. Emerging trends in State Politics of Bihar

Unit-5

9. Local Government Institutions: Urban and Rural – Structure and Functions
10. Panchayati Raj System and its impact on state politics.

Reading List:

1. Himanshu Roy, M.P. Singh and A.P.S. Chauhan (eds.), *State Politics in India*, Primus Books, 2017
2. Myron Weiner (ed), *State Politics in India*
3. Iqbal Narain, (ed), *State Politics in India*

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Professors B. Meant
Faculty, Dept. of Political Sci.
B.A. Honours
Bundel

4. Ashutosh Kumar, *Rethinking State Politics in India: Regions within Regions*, second edition, Routledge India, 2017

MPOLCC-13 Paper 12 India's Foreign Policy

Unit-1

1. Foreign Policy: Meaning, Principles and Objectives of India's Foreign Policy
2. Determinants of Foreign Policy – A) External and Domestic (Geography, Economy, History, Society and Politics)
3. Continuity and Change in India's Foreign Policy

Unit-2

4. India's relations with her Neighbours – China, Pakistan, Bangladesh, Nepal, Sri Lanka, Afghanistan and Maldives

Unit-3

5. India's "Look East Policy"
6. India's relations with Major Powers: U.S.A., Russia, Britain and France

Unit-4

7. India and the Global South: India's relations with Africa and Latin American Countries,
8. India's West Asia Policy, Growing relations with Israel

Unit-5

9. India's Contribution to Non-aligned Movement: Different Phases and Current Role
10. India and the Nuclear Question: Changing Perceptions and Policy, India's approach to Disarmament and Arms Control,
11. India's approach to major global issues – Globalization, Climate Change, Cross border Terrorism and Human Rights.

Reading List:

1. Shyam Sharan, *How India Sees the World: Kanyas to the 21st Century*, Juggernaut, Delhi, 2017
2. Aparna Pande, *From Chanakya to Modi: The Evolution of India's Foreign Policy*, Harper Collins, 2017
3. Kishore N. Dash, *Regionalism in South Asia: Negotiating Cooperation, Institutions, Structures*
4. David M. Scott (ed), *Handbook of India's International Relations*
5. Rajiv Sikri, *Challenge and Strategy: Rethinking India's Foreign Policy*, Sage
6. David M. Malone, *Does the Elephant Dance? Contemporary Indian Foreign Policy*
7. Carine Van De Wetering, *Changing U.S. Foreign Policy toward India: U.S. India Relations since the Cold War*
8. Kanti Bajpai (ed), *India's Grand Strategy: History, Theory and Cases*

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9. Krishnappa Venkateshany, *Grand Strategy for India: 2020 and Beyond*
10. R.S. Yadav, *Ibharat Ki Videsh Niti*, Pearson

MPOLCC-14 Paper 14 Political and Social Movements

Course Rationale: Political and social movements are a driving force in the political development and social change. They break the status quo in the system by challenging the maladies of the system and pressurizing the government to follow the emerging public opinion. This paper aims to acquaint the students of the meaning and significance of the political and social movements and to let them know the causes of their emergence, success, failure and impact on politics and society.

Course Content

Unit-1

Meaning of Political and Social Movements, New Social Movements, Non-Government Organisations (NGO), Civil Society Campaigns – the Community versus civil society debate, The Public Sphere

Unit-2

Dalit and Tribal Movements

Unit-3

Identity Movements: Religious and Linguistic Minorities Movements

Unit-4

Peasant Movements, Workers (Trade Union and Unorganised Labour) Movements
Women's Movements,

Unit-5

Anti-corruption Movements, Civil Liberties and Human Rights movements, Environmental Movement

Reading List:

1. Ghanshyam Shah, *Social Movements and the State*, Sage, 2007
2. Eva Maria Hardmann, *The Dalit Movement in India: Local Practices, Global Connections*, Oxford University Press, 2008
3. Raka Roy and Mary Fainosd Katzenstein (eds), *Social Movements in India*
4. D.N. Dhanagare, *Peasant Movement in India*, Oxford University Press
5. S.N. Chaudhary (ed), *Social Movements in Tribal India*, Rawat Publications, 2016
6. Ram Chandra Pradhan, *From Raj to Swraj*, Macmillan, New Delhi, 2008
7. B. Ramaswamy, *Women's Movement in India*, Isha Books, 2013
8. Upendra Basi and Bhiku Parekh (eds), *Crisis and Change in Contemporary India*, Sage
9. Balniki Prasad Singh, *The Problem of Change: A Study of North East India*, OUP
10. Meenakshi Mukherjee, *Realism and Reality: The Novel and Society in India*, OUP

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MPOL AECC-2
HUMAN VALUES & PROFESSIONAL ETHICS (2 Credits) and
Gender Sensitification (2 Credits)

(One credit requires ten hours of theory and twenty hours of practical/assignment/field work)

Unit - 1: Variety of Moral Issues, Principles of Ethics and Morality:

Understanding the Harmony in the Society, society being an extension of family, Integrity, Work Ethic, Courage, Empathy, Self Confidence, Professional Ideas and Virtues, Ethics as a Subset of Morality, Ethics and Organizations, Duties and Rights of employees and employers.

Unit - 2: Holistic approach to corporate ethics:

Vedantic Ethics – Tagore, Vivekanand, Gandhi and Aurobindo on Ethics, Ethics in Finance, Business and Environment, Professional Rights, Intellectual Property Rights, Corporate Responsibility, Social Audit and Ethical Investing, Computer and Ethics.

Unit - 3: Professional Ethics:

Augmenting Universal Human Order, Characteristics of people-friendly and eco-friendly production, Strategy for Transition from the Present State to Universal Human Order.

At the Level of Individual—as Socially and Ecologically Responsible Technologists and Managers

At the level of Society—as a Mutually Enriching Institutions and Organizations. Case studies of typical holistic technologies and management patterns.

Unit - 4: Gender – An Overview:-

Gender: Definition, Nature and Evolution, Culture, Tradition, Historicity;

Gender Spectrum: Biological, Sociological, Psychological conditioning;

Gender-based Division of Labour – Domestic Work and Use Value.

Unit - 5: Gender – Contemporary perspectives

Gender Justice and Human Rights: International Perspectives,

Gender: Constitutional and Legal perspectives, Media & Gender,

Gender: Emerging Issues and Challenges.

-----End of Semester III-----

Semester IV

MPOL EC-1 (Discipline Specific Elective) Indian Administrative System

Course Content

Unit-1

1. Introduction: Historical Dimension of Indian Administration: Ancient (Mauryan Period), Medieval (Mughal Period) and Colonial (British period)—Administrative Legacies of Colonial Administration
2. Ecology of Indian Administration: Social, Economic, Cultural, Political and Legal

Unit-2

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3. Structure of Central Administration: Central Secretariat, Cabinet Secretariat, Prime Minister's Office
4. Ministries and Departments in Government of India with special reference to Home, Finance, and External Affairs ministries

Unit-3

5. Structure of State Administration: State Secretariat, Chief Secretary and Directorate Relationship between Secretariat and Directorate
6. District Administration: Union-State-Local Relations; Changing role of the District Magistrate; District Administration and Democratic Decentralization

Unit-4

7. Personnel Administration - All India Services and Central Services - Recruitment, Training and Promotion
8. Problem of Corruption and remedial measures: (i) Central Vigilance Commission, (ii) Central Bureau of Investigation (iii) Lokpal and Lokayukta

Unit-5

9. Comptroller and Auditor General, NITI Aayog
10. Transparency in Administration: Right to Information, Right to Service Act with reference to Bihar

MPOL EC-2 (Discipline Specific Elective)
Introduction to International Law

Unit-1

1. The Origin, Development and Sources of International Law: Growth, Evolution—Positivists, Naturalists and Grotius Contributions;

Unit-2

2. The Nature and Content of International Law with reference to changing nature and different perspectives and Sanctions behind International Law
3. Relationship between International Law and Municipal Law

Unit-3

4. International Legal Principles: Recognition, Equality, Jurisdiction, Law of Sea, Treaty Obligation, Diplomatic Immunities and Privileges and Sovereign Immunity

Unit-4

5. Meaning and Desirability of Codification of International Law and its Progressive development
6. International Law and Economic Development: Third World Concerns.

Unit-5

7. Crime against Humanity and Provisions of International Law
8. Limitations and Possibilities of International Law.

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MPOL EC-3 (Discipline Specific Elective)

Administrative Theory

Unit-1

1. Administrative Ethos, Administrative Culture
2. Public/Politics and Administration
3. Political Economy Approach to the Study of Public Administration: Liberal-Democratic and Marxist Frameworks

Unit-2

4. Accountability and Control: Legislative Judicial, Executive and Popular and Public Control.
5. Administrative Law: (i) Meaning, Scope and Significance (ii) Delegated Legislation (iii) Administrative Tribunals - Central Administrative Tribunal

Unit-3

6. Principles and Forms of Organization: Department, Public Corporation, Independent Regulatory Commission

Unit-4

7. Comparative Public Administration - Evolution, Nature and Significance; Approaches to the study of Comparative Public Administration: Institutional, Behavioural and Policy Analysis.
8. Development Administration—Nature and Growth; Development Administration; Marxian and Neo Marxian Perspectives

Unit-5

9. New Public Administration
10. New Public Management
11. Bureaucracy and Development: Strong State versus the Market Debate.

Reading List:

1. Hoshiar Singh and Pradeep Sachdeva, *Public Administration: Theory and Practice*

MPOLS EC-4 (Discipline Specific Elective)

International Organisation

Unit-1

1. The Nature and Evolution (1815-1945) of International Organisation.
2. The League of Nations
3. The United Nations: Structure and Functions.

Unit-2

4. Pacific Settlement of Disputes and Enforcement Action

Unit-3

5. Economic and Social Development Activities of the International Organisations;

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6. Legal Status of International Organisations: A hybrid of National State System and International System

Unit-4

7. Human Rights: Codification and Guarantee

Unit-5

8. United Nations in the Post Cold War Era: Reformation and Revision of the UN and its Charter

MPOL DSE-1 Discipline Specific Elective Paper-1 Local Government in India
Local Government

Unit-1

1. Evolution of Local Self Government in India with special emphasis on 73rd and 74th Constitutional Amendment Acts

Unit-2

2. Structural Framework with reference to Bihar: Urban Municipal Corporation, Municipal Council and Nagar Panchayat
3. JFs: Functions (Services), Functionaries (Personnel), Funds (Finance) in Urban Local Government in Bihar

Unit-3

4. Structural Framework with reference to Bihar: Zila Parishad, Panchayat Samiti, Gram Panchayat, Nyaya Panchayat and Gram Sabha
5. JFs: Functions (Services), Functionaries (Personnel), Funds (Finance) in Rural Local Government in Bihar

Unit-4

6. Local Autonomy versus State Control in India with special reference to Bihar
7. An Overview of Local Governments in England: Structural Framework, Services, Finance, Central Control and Government of London

Unit-5

8. An Overview of Local Government of the United States of America: Forms of City Government, Government of New York
9. An Overview of the Local Government of France: Structural Framework, Prefect, Mayor, Government of Paris
10. Development Machinery of Local Levels.
11. Impact of Democratic Decentralization on Development Administration

Reading List:

1. Bidyut Chakrabarty and Rajendra Kumar Pandey, *Local Governance in India*, Sage

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MPOLS GE-1 (Generic Elective)

Human Rights

Generic Elective (GE) Course

Course title: **Human Rights** Course Code: GE-1 Credit 5

(There shall be 5 units each consisting of one credit) Course offered in: Semester - IV

Course Content

Unit I

Conceptual Aspects of Human Rights—

- Meaning and Concept of Human Right;
- Human Rights, Natural Rights, Civil Rights, Political Rights and Legal Rights.

Unit II

Evolution of the Concept of Human Rights

- Magna Carta, The United States Declaration of Independence; The French Declaration of the Rights of Man and the Citizen; United States Bill of Rights; Geneva Convention of 1864; Universal Declaration of Human Rights, 1948.
- International Bill of Rights, Significance of Universal Declaration of Human Rights International Covenant on Civil and Political Rights, International Covenant on Economic, Social and Cultural Rights.

Unit III

Diversity, Multiculturalism and Human Rights

- Value of Diversity: Collective Cultural Rights and the Idea of Universal Human Rights: Multiculturalism and Minority Rights: Protection and Promotion of Human Rights in Multicultural Societies.
- Beyond Universal Human Rights: Universalism of Human Rights; Nation-State and the Right to National Self-Determination: State Sovereignty and the Politics of Universal Human Rights.

Unit IV

Theoretical aspects of Human Rights.

- Theories of Human Rights—Liberal Perspective—Locke, Rousseau, J.S. Mill,
- Marxian Perspective—Marx, Gramsci
- Feminist Perspective of Human Rights.

Unit V

Assignment / Field Work based on Units I, II, III, and IV.

Arjo
25/3/2019

SR
25/3/2019
RP
25/3/2019

Murli
25-03-19

SR
25/3/19
Professor A. Murli
H.O. Dept. of Political Science
St. Xavier's College
Muzaffarpur

BABASAHEB BHIMRAO AMBEDKAR

BIHAR UNIVERSITY

MUZAFFARPUR



COURSES OF STUDY

FOR

M.A. 1ST SEMESTER EXAMINATION

PSYCHOLOGY

FROM :

PRada
30.3.19

Jagdish
30.03.19

B-Kumar
30.03.19

Pradip
30.03.19

Pr.
30/03/19

Head
Univ. Deptt. of Psychology
B.R.A.U. MUZ.

M. A.(Psychology) Syllabus under CBCS for the Universities of Bihar

Semester	Course Code	Name of Paper	Marks	Marks of CIA	Marks of ESE	Passing Criteria	Qualifying Criterion
One	CC-1	ADVANCED GENERAL PSYCHOLOGY	100	30	70	45% marks in CIA 45% marks in ESE	Marks decide class/ CGPA
	CC-2	ADVANCED SOCIAL PSYCHOLOGY	100	30	70	45% marks in CIA 45% marks in ESE	Marks decide class/ CGPA
	CC-3	RESEARCH METHODOLOGY	100	30	70	45% marks in CIA 45% marks in ESE	Marks decide class/ CGPA
	CC-4	EXPERIMENTS IN PSYCHOLOGY	100	30	70	45% marks in CIA 45% marks in ESE	Marks decide class/ CGPA
	AECC-1		100	30	70	45% marks in CIA 45% marks in ESE	Qualify

SEMESTER-I

1. ADVANCED GENERAL PSYCHOLOGY

Course Contents:

UNIT-I

Genetic Influence on Behaviour: Chromosomes and Genes; Psychophysics and Signal Detection Theory: Problems of Psychophysics, Psychophysical Methods, Errors in Psychophysical Methods, Experimental Findings, Theory of Signal Detection (TSD).

UNIT-2

Learning: Classical Conditioning; Operant Conditioning; Cognitive Learning; Skinner's Viewpoints towards Programmed Learning, Computer Assisted Instruction or CAI – Personalized System of Instruction of PSI, Probability Learning, Verbal Learning.

UNIT-III

Motivation and Emotion: Basic motivational concepts, Types of motives, Approaches to the study of motivation: Psychoanalytical, S-R Cognitive, humanistic; Physiological correlates of emotion; current theories of emotion and facial feedback hypothesis

UNIT IV

Intelligence: Nature of Intelligence, Theories: Spearman's Two Factor, Multiple Factor Theory (Thurndike and Guilford), Capell's Theory, Theory of Multiple Intelligence (Gardner), Emotional Intelligence; Personality: Nature, determinants, Theories: Freud, Erik Erikson, Bandura, Cattell, Carl Rogers; Indian approach, measurement of personality: psychometric and projective tests.

RECOMMENDED BOOKS:

Ahmad, Anis (2014). General Psychology. Axis Books Pvt. Ltd., New Delhi.
Baron, R. A. (2009) Psychology, Pearson, New Delhi

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Head
Univ. Dept. of Psychol.
B.R.A.U. Mut.

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30-07-19

30-07-2019

Ciccarelli, S. K., & Meyer, G. E. (2009). *Psychology*. India: Pearson.

Singh, A.K. (2014). *Advanced General Psychology*. Delhi: MotilalBanarsidas.

Morgan, C. T., King, R. A., Weisz, J. R., & Schopler, J. (1993). *Introduction to Psychology*. New Delhi: McGraw Hill Education.

Passer, M. W., & Smith, R. E., (2011). *Psychology: The Science of Mind and Behaviour*. India: McGraw Hill.

2. ADVANCED SOCIAL PSYCHOLOGY

Course Contents:

UNIT – 1

Introduction: Nature, Fields of social psychology, Social psychology in the new millennium: cognitive perspective, multicultural perspective, biological and evolutionary perspective; Understanding Social World: Social Perception, Social Psychology in Indian Perspective Attribution Theories and Attribution Biases.

UNIT-2

Attitude and its change; aggression and ways to manage aggression; pro-social behaviour.

UNIT-3

Intergroup relations: Group dynamics, leadership style and effectiveness, Theories of intergroup relations: relative deprivation theory, realistic conflict theory, equity theory.

UNIT-4

Applications in real world: Revisiting the meanings of social psychology in social psychological perspectives; challenges of societal development, application of gender, poverty, marginalization and social suffering.

RECOMMENDED BOOKS:

Baron, R. A., & Byrne, D. (2000). (8th ed.) *Social psychology*. New Delhi: Prentice Hall of India.

Dalal, A.K., & Misra, G. (Ed.) (2001). *New directions in Indian psychology*, Vol. 1: *Social psychology*. New Delhi: Sage.

Misra G. (Ed.) (2009). *Psychology in India*, Vol. 2: *Social and organizational processes*. New Delhi: Pearson.

Shaw, M. E., & Costanzo, P. R. (1970). *Theories of social psychology*. USA: McGraw-Hill.

Singh, A. K. (2016). *Social Psychology*, Prentice Hall, New Delhi

Taylor, M., & Moghaddam, F.M. (1987). *Theories of intergroup relations*. NY: Praeger.

A. COORDINATION TO ANOTHER COURSE

Course / semester /

Prerequisites

Level of learning / cognitive / theoretical / practical / research

Intended learning outcomes

3. RESEARCH METHODOLOGY

Course Contents:

UNIT-1

Introduction to research: Meaning, purpose and dimensions of research; Steps in test development and standardization, Ethical issues in psychological testing; Research Problem: Characteristics or Criteria of good Research problem, Sources of Research Problem, Selection of Research problem

UNIT-2

Sampling and Research Design: Sampling procedures, Types of Sampling, Errors in Sampling; Research Design: Randomized experimental and quasi-experimental approaches, Group vs. single-subject designs, Factorial design.

UNIT-3

Research settings and Methods of Data collection: Observation, Interview, Questionnaire, Survey research and other non-experimental methods; Test standardization – Steps of test construction, Guidelines for Item Writing, Item analysis, Reliability – Methods of Estimating Reliability; Validity – Types of Validity; Norms – Types of Norms – Percentile Rank, Standard Score Norm.

UNIT-4

Qualitative Research: Philosophy and conceptual foundations; proposing and reporting qualitative research, formulating research questions, developing semi-structured interview schedule, generating and analyzing qualitative data.

RECOMMENDED BOOKS:

Bridget, S., & Cathy, L. (Eds.) (2008). *Research methods in the social sciences*. New Delhi, India: Vistaar Publication.

Chadha, N. K. (2009). *Applied psychometry*. New Delhi, India: Sage.

Goodey, W. J. & Han, P. K. (1952). *Methods in Social Research*, McGraw Hill, NY

Kothari, C. R. *Research Methodology*, New Age International Publishers, New Delhi

Kerlinger, F. N. (1973). *Foundations of behavioral research*. USA: Holt, Rinehart & Winston.

Denzin, N. K., & Lincoln, Y. (2005). *Handbook of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage.

Singh, A. K. (2016). *Test, Measurement and Research Methods in Behavioral Sciences*, BharatBhawan, Patna.

Willig, C., & Stainton-Rogers, W. (Eds.) (2008). *Handbook of qualitative research in psychology*. London: Sage.

4. EXPERIMENTS IN PSYCHOLOGY

Course Contents:

UNIT-1

1. Speed of learning as a function of meaningfulness of material.

2. Bilateral transfer of training.

3. Effect of reward & punishment on learning.

UNIT-II

1. Retroactive inhibition
2. Retention as a function of time: Study of retention curve.
3. Efficiency of Massed Vs. Distributed practice in learning

UNIT-III

1. Transfer of training in Maze Learning
2. Habit interference

UNIT-IV

1. Effect of knowledge of result on performance
2. Zeigarnik Effect

RECOMMENDED BOOKS:

D' Amato, M.R. Experimental Psychology: Methodology, (1970): Psycho-Physic & Learning, New York: McGraw Hill

Mohsin, S. M. (1974). Experiments in Psychology. Oxford Publications, New Delhi

Underwood, B. J. (1963): Experimental: An Introduction, Bombay, The Times of India Press

Woodworth, Robert S. & Schlosberg, Harold (1971); Experimental Psychology, Calcutta: Oxford & IBH Publishing Co.

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PB a/c
30-3-19
Kulsh
30-3-19
Bhalu
30-03-2019

30/03/19
Heads
Univ. Dept. of Psychology
B.R.A.U. Muz.

BABASAHEB BHIMRAO AMBEDKAR

BIHAR UNIVERSITY

MUZAFFARPUR



COURSES OF STUDY

FOR

M.A. 2ND SEMESTER EXAMINATION

PSYCHOLOGY

FROM :

PPS
30-3-19
30/3/19

30/03/19

30-03-19

30/03/19

Head
Univ. Dept. of Psychology
E.P.A.S.

M. A.(Psychology) Syllabus under CBCS for the Universities of Bihar

Semester	Course Code	Name of Paper	Marks	Marks of CIA	Marks of ESE	Passing Criteria	Qualifying Criterion
2nd	CC-5	COGNITIVE PSYCHOLOGY	100	30	70	40% marks in CIA 40% marks in ESE	Marks decide class/CGPA
	CC-6	NEUROPSYCHOLOGY	100	30	70	40% marks in CIA 40% marks in ESE	Marks decide class/CGPA
	CC-7	PSYCHOPATHOLOGY	100	30	70	40% marks in CIA 40% marks in ESE	Marks decide class/CGPA
	CC-8	STATISTICS FOR PSYCHOLOGY	100	30	70	40% marks in CIA 40% marks in ESE	Marks decide class/CGPA
	CC-9	PSYCHOLOGICAL ASSESSMENT	100	30	70	40% marks in CIA 40% marks in ESE	Marks decide class/CGPA
	AEC-1		100	30	70	40% marks in CIA 40% marks in ESE	Qualify

SEMESTER-II

5. COGNITIVE PSYCHOLOGY

Course Contents

UNIT- 1

Cognitive psychology: Origin and current status; Attention and perception: nature and theories of selective attention, sustained attention- nature, determinants and theories, subliminal perception; Perceptual organization, Time Perception : Fourth Dimension, Pattern Recognition : Bottom up and Top Down Approach, Perceptual Learning, Depth Perception.

UNIT-2

Memory Processes: Sensory Memory, Short Term and Long Term Memory- types, coding and retrieval; working memory, Forgetting: Incidental and Motivated Forgetting; Applications: Everyday memories; Autobiographical memory; Flashbulb memory, improving memory.

UNIT-3

Thinking and problem solving: types of thinking, Components of thinking: images, concepts.

UNIT-4

Decision Making: Models and Theories; Complex, Uncertain Decision Making; Human Problem Solving: Strategies and Heuristics; Artificial Intelligence.

RECOMMENDED BOOKS:

Babbeley, A., Eysenck, M.W., & Anderson, M.C.(2015). Memory. New York:Psychology Press.
Chance,F.(1988).Learning and Behaviour. California: Wadsworth.

M.A. 20-7-19
Babbeley
-5-19

Lehman, D.
30-03-19

Allen, J.
30-03-2019

Head
Univ. Dept. of Psychology
-11-18

Bernstein, D.A., Penner, L.P., Clarke-Stewart, E.J. (2008). *Psychology* (8th Ed.). N.Y.: Houghton Mifflin Smith, E. E. & Koslyn, S. M. (2007) *Cognitive Psychology Mind and Brain*. Prentice – Hall of India Private Limited.

Kellog, R.T. (2007). *Fundamentals of Cognitive Psychology*, Sage Publication, New Delhi.

Matlin, M. W. (2006). *Cognition*, John Wiley & Sons, Inc. U.S.A.

Baron, R. (2004) *Psychology*. New Delhi: Prentice – Hall of India.

6. NEURO PSYCHOLOGY

COURSE CONTENTS:

UNIT - 1:

Brain, Mind and Behavior: Emerging research areas in Neuropsychology, Methods of Investigating Brain: Electrophysiological procedures; Neuro-imaging techniques; Function of cortex, Neuro-endocrine system.

UNIT - 2:

Neuropsychological deficits in stroke, head injury, tumours, epilepsy

UNIT-3:

Frontal lobe syndrome: Neuropsychology of motivation, Neuro physiological base of learning and memory, speech and hearing disturbances.

Parietal lobe syndrome: Coma and altered consciousness Disturbance of visual, memory, reading and writing disturbances.

UNIT-4:

Occipital lobe syndromes: Visual Theory, Disturbance of visual Perceptions

Temporal Lobe Syndromes: Hearing Theory, Disturbances of hearing and Vestibular functions

RECOMMENDED BOOKS:

Hollman, K.M. & Valenstein, E. (1993). *Clinical Neuropsychology*. New York: Oxford University Press.

Kolb, B., & Whisler, I.Q. (1990). *Fundamentals of human Neuropsychology*. New York: Freeman, W.H

Gupta, Ashim (2006). *Cognitive rehabilitation: A multimodal approach*. *Journal of Indian Health Psychology*, 1 (1), 98-106.

Finel, J.P. (2006). *Biopsychology*. Pearson Education, Inc.

Singh, A.K. *Nero Manovigyan*, Patna: MotilalBanarsidas

7. PSYCHOPATHOLOGY

UNIT 1

Psychopathology: Nature, Historical background, Perspectives-Biological and Psychological. Classification: DSM system of classification: DSM-5; ICD-10.

UNIT-2

Anxiety and Obsessive Disorders: GAD, Panic, Specific phobia, OCD, PTSD. Dissociative Disorders: Dissociative identity disorder, Dissociative amnesia, Dissociative depersonalization, Sleep and eating disorders.

UNIT-3

Somatiform Disorders: Somatization disorder, Illness anxiety disorder, Body dysmorphic disorder, Conversion disorder. Bipolar and related disorders: Bipolar I disorder, Bipolar II disorder.

UNIT-4

Schizophrenia and Delusional Disorders: Clinical picture, Etiology and Treatment approaches. Substance Use Disorders: Alcohol abuse and dependence, Drug abuse and dependence, Personality disorders.

RECOMMENDED BOOKS:

Adams P.B. and Sattler, H.E. (2001) *Comprehensive Handbook of Psychopathology*.

Third edition, NY: Springer.

Carson, R.C. & Butcher, J. N. (2016). *Abnormal Psychology*. Pearson, New Delhi

Hersen, M and Beidel, D (2012) *Adult psychopathology and diagnosis*, 6th edition, NY: Wiley.

Sadock B.J. and Sadock V.A.(2007) *Kaplan and Sadock's Synopsis of Psychiatry*, 10th edition, P: Lipincott, Williams and Wilkins.

B. STATISTICS FOR PSYCHOLOGY

COURSE CONTENTS

UNIT I

- Distributions: discrete distributions; continuous distributions, jointly distributed random variables.
- Inference: estimation theory, statistical hypothesis testing, types of errors.
- Normal Probability Curve and Deviation (Skewness and Kurtosis)

UNIT II

- Correlation Statistics: Product Moment; Rank Order; Biserial; point-biserial, phi-coefficient.
- Inferential Statistics: t-test;

UNIT -III

- ANOVA (One way & two ways)
- Chi square
- Mann-Whitney U-test.

UNIT - IV.

Multiple Regression and Factor Analysis using Software Packages

- Multiple Regressions: basic concepts, methods and uses
- Factor Analysis: basic concepts, methods of extraction and methods of rotation.

RECOMMENDED BOOKS:

Howell, D. (2009). *Statistical Methods for Psychology* (7th ed.). Wadsworth.

Wilcox R. R. (2009). *Basic Statistics: Understanding Conventional Methods and Modern Insights*. NY: OUP.

Minimum, E. W., King, B. M., & Bear, G. (2001). *Statistical reasoning in psychology and education*. Singapore: John-Wiley.

Aron & Aron (2008). *Statistics for Psychology* (5th ed). New Delhi: Pearson

9. PSYCHOLOGICAL ASSESMENT

Applications and Report Writing in Practice

UNIT - 1:

Introduction to Psychological Assessment: Meaning of Psychological Assessment, Types of test, scale, batteries, Ethical and Professional standards for tests, report writing.

UNIT - 2:

Assessment of ability and aptitude: Assessment of intelligence- WAIS; Assessment of aptitude, achievement and interest: Differential Aptitude Test.

UNIT - 3:

Assessment of Personality: MBTI, 16 PF, RT, TAT, Big Five personality Test

UNIT - 4:

Assessment in other related areas: Emotional Intelligence Test, Well-being scale.

RECOMMENDED BOOKS:

Garret, H.E (1951): *Great Experiments in Psychology*, New York: Appleton- Century Crafts, Inc Third Edition

Kapusiwami, B. (1954) *Elementary Experiments in Psychology*, Madras: Oxford University Press

Anastasi, A. & Urbina, S. (2009). *Psychological Testing*. Prentice Hall, New Delhi.

XXXX
P.A. 30.3.19
Ph.D. 30.3.19
Head 30.3.19

30.3.19

30.3.19

Head
Univ. Dept. of Psychology
B.R.A.U. Muz.

BABASAHEB BHIMRAO AMBEDKAR

BIHAR UNIVERSITY

MUZAFFARPUR



COURSES OF STUDY

FOR

M.A. 3RD SEMESTER EXAMINATION

PSYCHOLOGY

FROM :

PD No. 3.19
Muzaffarpur
26-10-19

18/10/2019
26-10-19

Chhabra
26-10-2019

Head
Univ. Dept. of Psychology
B.R.A.U. Mug.

M. A. (Psychology) Syllabus under CBCS for the Universities of Bihar

Semester	Course Code	Name of Paper	Marks	Marks of OA	Marks of ESE	Passing Criteria	Qualifying Criterion
Third	CC-10	HEALTH PSYCHOLOGY	100	30	70	45% marks in CIA 45% marks in ESE	Marks class/CGPA
	CC-11	COUNSELLING PSYCHOLOGY	100	30	70	45% marks in CIA 45% marks in ESE	Marks class/CGPA
	CC-12	EDUCATIONAL PSYCHOLOGY	100	30	70	45% marks in CIA 45% marks in ESE	Marks class/CGPA
	CC-13	HUMAN RESOURCE MANAGEMENT	100	30	70	45% marks in CIA 45% marks in ESE	Marks class/CGPA
	CC-14	GENERAL COUNSELLING SKILLS	100	30	70	45% marks in CIA 45% marks in ESE	Marks class/CGPA
	AECC-2		100	30	70	45% marks in CIA 45% marks in ESE	Qualify

Semester- III

18. HEALTH PSYCHOLOGY

Course Contents

UNIT-I

Health Psychology: Nature, Mind-body relationship, Models of health psychology: Biomedical, Bio-psychosocial model, Need of health psychology.

UNIT-II

Health Beliefs: Health belief model, Theory of reasoned action, Theory of planned behaviour, Cognitive-behavioural approaches to health change. Stress & Coping: sources of stress, Transactional model of stress, coping with stress.

UNIT-III

Hypertension & Diabetes: Psychosocial factors of hypertension, Psychological Intervention of hypertension; Types of diabetes, Problems in self management of diabetes, Psychological management of diabetes; Obesity - Factors Associated with Obesity, Treatment of Obesity; Eating Disorders - Anorexia Nervosa - Bulimia; Alcoholism and Problem Drinking.

UNIT-IV

AIDS: Psychological intervention; Psycho-social factors of AIDS, Coping with AIDS, Effects and treatment of AIDS.

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B. H.

Enrollment
20.12.19

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Head
Dept. of Psychology

CANCER: -The Prevalence and types of Cancer, Causes of Cancer: Socio-cultural factors in Cancer, diagnosing and treating Cancer, the psycho-social impact of Cancer, psycho- social Interventions for Cancer.

RECOMMENDED BOOKS:

Edward P. Sarafino,(1990). Health Psychology, John Wiley&Sons, INC.

Linda Brannon and Jess Feist. (2007). Introduction to Health Psychology, Thomson: Indian Edition.

Shelley E. Taylor. (2007). Health Psychology, Tata McGrawHill , Sixth Edition.

Mahotra, S.M, Batta, P. &Yadava, A. (2007). Health Psychology: Psycho-Social Perspective. New Delhi: Common Wealth Publishers.

Singh, R.,Yadava, A. & Sharma, N.R. (2015). Health Psychology. New Delhi: Global Vision Publishing House.

11. ADVANCED EDUCATIONAL PSYCHOLOGY

Course Contents

UNIT - I

Nature of educational psychology and its applications; Historical perspective to Educational Psychology; Education, learning and adjustment of Gifted children, Mentally retarded, Backward children and Physically handicapped children; Moral Development: Piaget &Kohlberg Theory.

UNIT - II

Understanding disability: Range of disabilities: (locomotor, hearing, visual, specific learning disabilities and mental disability), addressing learning difficulties in the classroom: Pedagogic strategies for children with special needs.

UNIT - III

Educational assessment: Assessment methods: Formative and summative assessment, Comprehensive and continuous assessment, standardized and diagnostic tests

UNIT-IV

Psychological vulnerability and distress in schools- nature of psychological vulnerabilities and distress: exam anxiety, negative media influences (including social media), school pressures, child abuse, consumerism, crisis of values etc.

RECOMMENDED BOOKS:

Puri, M., & George, A. (2004). Handbook of inclusive education for educators, administrators, and planners. New Delhi, India: Sage Publications.

Thapan, M. (Ed.) (2014). Ethnographies of schooling in contemporary India. New Delhi, India: Sage.

Kakar, S. (2008). The inner world: A psychoanalytic study of childhood and society in India. New Delhi, India: Oxford University Press.

Alexander, C., & Langer, E. (Eds.) (1991). *Higher stages of human development*. New York: Oxford University Press.

12. COUNSELLING PSYCHOLOGY

Course Contents:

UNIT - I

Definition of counseling, Counseling and psycho-therapy, counseling as a helping relationship, as a solution to human problems; Counselling – expectations and goals, Achievement of positive mental health

UNIT -II

Approach to counseling: The directive or authoritarian approach (Psycho-analytic), Humanistic Approach, Behavioristic Approach, The existential Point of view; Counselling Process: preparation, process, content, steps in the counseling process, variables affecting the counseling process.

UNIT -III

Counseling in the Educational setting: Counseling of School & College students; the role of teachers in counseling.

Special Areas in Counseling: Family group consultation – Counseling with families Concern children as well as parents, Marriage & Pre-marital Counseling.

UNIT -IV

Training for Counseling – Counselor preparation & professional issues, Academic preparation, practical skills, Ethical standards, Legal considerations, Conception of a professional worker, Modern Trends in Counselling: Counselling Movement in India, present status of counseling & Psychotherapy.

RECOMMENDED BOOKS:

- Alam, Shah (2012). *Modern Concept of Guidance & Counseling*. GyanandaPrakashan, New Delhi.
- Alam, Shah & Ahmad, Ghulam (2011). *NirdeshanEvamPravartakAmoolBhatAadhar*. GyanandaPrakashan, New Delhi.
- Bordin, E. S. (1985). *Psychological Counselling*. N.Y. : Appletan Century Crafts, Inc.
- Castro, J. W. (2004). *Educational Psychology*, Delhi Book Stores.
- Narayanas, S. (1989). *Counselling Psychology*, (2nd ed.), N.D. Tata McGraw Hill Book Co. Ltd.,
- Stuller, B. (Ed.) (1965). *Theories of Counselling*. New York: MacGraw Hill Book Company.
- Singh, A.K (2015) *Educational Psychology*, BharatiBhavan, Patna.
- Tyler, L.E. (1969). *The work of a counselor* (3rd ed), N.Y. Appletan Century Crafts.
- Warters, J. (1964). *Techniques of Counselling*, (2nd ed.), N.Y. : MacGraw Hill Book Company.

13. HUMAN RESOURCE MANAGEMENT

Course Contents

Unit-I

Human Resource Management: objectives; relationship with the internal and external environment; roles and responsibilities of HRM department, emerging trends in HRM.

UNIT – II

Recruitment and Selection: importance of recruitment and selection; Recruiting methods: External recruiting, Internal recruiting, Effectiveness of various recruiting methods; selection process. - Fundamentals of personnel measurement; measurement of individual differences: Application Blanks; Personality assessment.

UNIT – III

Training and Development:-Importance of training and development; Types of training: substantive knowledge and skill training, human process, attitudinal and sensitivity (T group) training; Models for evaluation of program effectiveness: Kirkpatrick's four level model, and CIRO models.

UNIT - IV

Performance Appraisal System:- Performance appraisal process and procedures, Methods of performance appraisal – norm referenced methods, Behavioral methods; MBO; output methods, 360 degree performance appraisal, self-appraisal- advantages, disadvantages.

BOOKS RECOMMENDED :-

- Ashwathappa, K. (2008) Human Resource Management: Text and Cases (5th Ed.) Tata McGraw Hill, New Delhi.
- Dwivedi, R.S. (2006) Managing Human Resources: Personnel Management in Indian Enterprises (2nd Ed.) Galgotia Publishing Company, New Delhi.
- Mondy, W. R. & Noe R.M, (2006) Human Resource Management (9th Ed.) Pearson Education.
- Mamoria, C.B. & Gankar, S.V. (2006) Personnel Management; Text & Cases Himalaya Publishing House, Mumbai.
- Peterson, D. M. & Pandey, S. (2013). Stress and Work: Perspectives on Understanding and Managing Stress. Sage Publications, New Delhi
- Sharma, A. and Khundekar, A. (2017). Strategic Human Resources Management: An Indian Perspective. Sage Publications, New Delhi.

14. GENERAL COUNSELLING SKILLS

1. Journal article evaluation- Student shall critically evaluate one recent research article and present the same in counseling - journal club meeting orally using audio- visual aids.
2. Case problem observation- case history, identification of problem; forming impression suggested and employed intervention strategies history taking and writing report of the same and submits for perusal.

3. Assessment of Social Maturity Scale or Dyslexia Screening Test or Screening of autism Wechsler Intelligence Scale(adult/children)
Differential Aptitude Test
Personality and Interests Assessment: 16PF,MBTI,EPQ/EPI
Projective Test: IBT/ TAT, Rosenzweig Picture Frustration Study (Children/ Adult)
4. Outreach program: Guidance and/or counseling workshop for specified groups as decided by the concerned teachers' committee.

Institutional visits:

- i. Each student is required to complete practical file containing five testing reports, two case history reports, visit report and workshop report and submit the same for practical examination.
- ii. Planning and recording of intervention plan for at least 3 case studies: 20 marks
- iii. Classroom presentation of at least one casealong with test profiles and therapy plan: 10 marks
- iv. Semester end Practical examination: 70 marks.
- v. Viva voce examination: 40 marks Test conduction and report writings: 30 marks

RECOMMENDED BOOKS:

Australia,E. (2005). Understanding autism. Elsevier Australia.
 Nilas, S. & Harris, B. (2009). Career development interventions in the 21st Century (2nd ed.). Upper Saddle River, NJ: Pearson Education.
 Goldard, K and Goldard, D (2004) Counselling Adolescents. Sage Publications, New Delhi.
 Wong, D., Butler, D.L. (2012) (4th edition) Learning about disabilities. Academic press.

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P.S. Jha
 30-3-19
 30-03-19
 30-3-19
 30-03-2019

30/03/19
 30/03/19

Head
 Union Dept. of Psychology
 B.R.A.S.U. Mug.

BABASAHEB BHIMRAO AMBEDKAR

BIHAR UNIVERSITY

MUZAFFARPUR



COURSES OF STUDY

FOR

M.A. 4TH SEMESTER EXAMINATION

PSYCHOLOGY

FROM :

2019-20
30.03.19

M. Kamal
28.03.19

Abhinav
30.03.2019

Dr. 30/03/19
Head
Dept. of Psychology

M. A.(Psychology) Syllabus under CBCS for the Universities of Bihar

Semester	Course Code	Name of Paper	Marks	Marks of CIA	Marks of ESE	Passing Criteria	Qualifying Criterion
4TH	EC-1	CLINICAL PSYCHOLOGY/ ORGANISATIONAL BEHAVIOUR/ POSITIVE PSYCHOLOGY/ PSYCHOMETRICS/ COMPUTER APPLICATION IN PSYCHOLOGY- PAPER-1	100	30	70	45% MARKS IN CIA 45% MARKS IN ESE	MARKS DECIDE CLASS/CGPA
	EC-2	-OO- PAPER-2	100	30	70	45% MARKS IN CIA 45% MARKS IN ESE	MARKS DECIDE CLASS/CGPA
	DSE-1		100	30	70	45% MARKS IN CIA 45% MARKS IN ESE	QUALIFY
	OR GE-1		100	30	70	45% MARKS IN CIA 45% MARKS IN ESE	QUALIFY

Semester-IV

SPECIAL PAPER- ELECTIVE PAPERS- 1 & 2

A. M.A. SPECIALISATION IN ORGANISATIONAL BEHAVIOUR

PAPER-I-ORGANISATIONAL BEHAVIOUR IN INDIAN PERSPECTIVE

Course Contents

UNIT-I

Traditional and Modern Approach, Indian cultural context: History of OB in India, The Indian mind-set, Appreciating enabling and disabling contexts, Context sensitivity of Indians.

Unit-II

Self, culture and personality: Understanding Indian view of self, Individual differences and their impact on managerial and interpersonal behavior: Dependence proneness, Orientations: Collectivist, materialist and holistic,

UNIT-III

Groups and teams: Difference between groups and teams, types of team, hindrance in team building: Group think, Indian societal stereotypes and prejudice; Building effective teams: Stages of team building and issues at each stage.

P. Prasad
30-05-2019

12/10/2019
30-05-19

P. Prasad
30-05-2019

30/05/19
Head

Univ. Dept. of Psychology
P.A.B.U. Muz

UNIT-IV

Leadership: Theories of Leadership, Leadership styles congruent with Indian culture: Pioneering-Innovative (PI) style; Paternalistic Leadership, Nurturant Task Leadership style.

RECOMMENDED BOOKS:

- Robbins, P.S.(2003).Organizational Behaviour. New Delhi: Prentice Hall of India Private Limited.
- Pareek, U. (2007). Understanding Organizational Behaviour (2nd ed.). Delhi, India: Oxford University Press.
- Parikh, M., & Gupta, R. K. (2010).Organisational Behavior. New Delhi: McGraw Hill.
- Sinha, J. B. P. (2009). Culture and Organisational Behaviour. New Delhi: Sage Publications.
- Sinha, J. B. P. (2014). Psycho-social analysis of Indian mind set. New Delhi: Springer.

Paper-II Interpersonal Processes in Organisations

Course Contents:

UNIT-I

Individual in organisation: Importance of interpersonal relationships in organization: Concept of work motivation - theories of motivation, Integrating contemporary theories of motivation, Job satisfaction.

UNIT-II

Organisational culture : Nature of organisational culture: Typology of organisational culture, Indian patterns of work culture, Manifestation of organisational culture; measurement and changing organisational culture.

UNIT-III

Introduction to organisation development: Definition, history of organisational development, process of organisation development: Models and theories of planned change: Kurt Lewin, Burke-Litwin Model, Pomas and Robertson model.

UNIT-IV

Behaviour in Organisation: Productive behaviour: Nature and Process, Organisational citizenship behaviour and Organisational commitment.

Counterproductive Behaviour: Nature and Processes: Absenteeism, Employee Turnover, Ineffective job performance.

Emerging challenges of organisational behaviour: Knowledge management and people issues; Competency mapping and psychological processes, Coaching-mentoring and counseling

RECOMMENDED BOOKS:

- Jex,S. M.(2002).Organisational Psychology. New York: John Wiley & Sons
- Robbins, P.S.(2003).Organisational Behaviour. New Delhi: Prentice Hall of India Pvt. Ltd.
- Pareek, U. (2007). Understanding Organisational Behaviour (2nd Ed.). Delhi, India: Oxford University Press.

- Parikh, M.& Gupta, R. K. (2010). *Organisational Behaviour*. New Delhi: Mc-Graw Hill.
- Sinha, J. B. P. (2009). *Culture and Organisational Behaviour*. New Delhi: Sage Publications.
- Sinha, J. B. P. (2014). *Psycho-social analysis of Indian mind set*. New Delhi: Springer.

MA, SPECIALISATION IN CLINICAL PSYCHOLOGY

Paper I - Introduction to Clinical Psychology

Course Contents:

UNIT-1

Foundations: Historical background: Early & Recent history, Nature of discipline: Theory and research; Developing a professional identity: Education & training, professional activities and employment setting.

UNIT-2

Psychodynamic approach: Brief orientation to psychoanalytic psychologies – Freud, Adler, Jung. Understanding psychological defenses.

UNIT-3

Other major approaches: Behavioural and cognitive-behavioural; Humanistic; Existential; Family systems, Biological.

UNIT-4

Clinical assessment: Rationale and planning; Clinical interviewing; Areas of applications: Intellectual and educational; personality and interpersonal; behavioural and psycho-diagnostic.

RECOMMENDED BOOKS:

- Fernandes-Ballesteros, R. (Ed.) (2003). *Encyclopedia of psychological assessment (Vol.I & II)*. New Delhi, India: Sage.
- Gregory, R. J. (2000). *Psychological testing: History, principles, and applications (3rd ed.)*. Boston: Allyn& Bacon.
- Hecker, J. E., & Thorpe, G. L. (2005). *Introduction to clinical psychology: Science, practice, and ethics*. Delhi, India: Pearson Education.
- Neitral, N. T; Braten, D.A & Milch, R. (2003). *Introduction to Clinical Psychology*. Prentice Hall, New Delhi
- Pomerantz, A. M. (2008). *Clinical psychology: Science, practice, and culture*. New Delhi, India: Sage Publications.

Paper II – Psychotherapy

Course Contents:

UNIT-1

Foundations: Becoming a psychotherapist: Training and supervision; Stages of therapy; Modes of therapy: Individual, group, couples & family; Critical/controversial issues in psychotherapy.

UNIT-2

Psychodynamic therapies: Psychoanalytic therapies, Object-relations therapies, Interpersonal approaches.

UNIT-3

Humanistic & transpersonal therapies: Client-centered therapies; Existential therapies; Gestalt therapies; transpersonal therapies.

UNIT-4

Behavioural& cognitive-behavioural therapies: Behavioural therapy; Cognitive therapy (Beck); Rational emotive behaviour therapy (Ellis).

BOOK READINGS:

Corey, G. (2015). *Theory and practice of counseling and psychotherapy*. Boston: Cengage Learning.

Feltham, C. (Ed.) (1999). *Controversies in psychotherapy and counseling*. New Delhi: Sage.

Hecker, J. E., & Thorpe, G. L. (2005). *Introduction to clinical psychology: Science, practice, and ethics (Low Price Edition)*. Delhi, India: Pearson Education.

Palmer, S. (Ed.) (2006). *Introduction to counseling and psychotherapy: The essential guide*. New Delhi, India: Sage.

MA, SPECIALIZATION IN PSYCHOMETRICS

Paper I - Statistics

Course Contents:

UNIT-I

Introduction to statistics: Types of data, describing variables numerically, probability distribution and normal curve, calculating central tendency and dispersion, relationships between two or more variables: Pearson correlation and Spearman's rho, point-biserial, biserial, tetrachoric.

UNIT-II

Significance testing: Logic of hypothesis testing, The standard error of means and Standard error of difference between means, The t-test: Comparing two samples of correlated/uncorrelated scores, Chi-square: Differences between samples of frequency data, One-tailed versus two-tailed significance testing.

UNIT-III

Introduction to analysis of variance: Analysis of variance (ANOVA): one-way and two-way, Analysis of Co-variance.

UNIT-IV

Partial correlation, multiple regression and multiple correlation

Non-parametric statistics: Difference between parametric and non-parametric statistics; Mann-Whitney-Wilcoxon test, Kendal coefficient of concordance, Sign test.

RECOMMENDED BOOKS:

Aron, A., & Aron, E. N. (1994). *Statistics for psychology*. New Jersey, NJ: Prentice Hall.

Garrett, H. E. (1966). *Statistics in psychology and education*. Bombay, India: VakilsFisher & Simon Pvt. Ltd.

Guilford, J. P. (1965). *Fundamental statistics in psychology and education* (4th ed.). New Delhi, India: Subject Publications.

Levin, J., & Fox, J. A. (2006). *Elementary statistics in social research* (10th ed.). New Delhi, India: Pearson Education.

Paper II - The Science of Psychological Assessment

Course Contents:

UNIT-I

Perspectives on psychometrics- Scientific measurement in psychometrics and measurement in the natural sciences, Measurement models: Classical test theory, Latent variable model, Representational measurement model, the theory of true scores.

UNIT-II

Process of test construction: Knowledge-based and person-based questionnaire, Objective and open-ended tests, Norm-referenced and criterion-referenced testing.

Item analysis: Classical item analysis statistics for knowledge-based tests, person-based tests, criterion-referenced testing.

Factor analysis: Concept, Exploratory and Confirmatory factor analysis, Eigen value, factor loading, Kaiser criterion and other techniques for identifying the number of factors.

UNIT-III

Standardization of tests: Reliability: Concept and forms of error; Factors influencing reliability, Methods: Spearman-Brown correction, K-R Formula, cautions in the use of reliability coefficient.

Validity: Concepts and types of validity; factorial validity; difference between validation and validity.

Normalisation: Algebraic normalisation, graphical normalisation

UNIT-IV

Bias in testing and assessment: forms of bias, item bias: Identifying item bias, differential item functioning, item offensiveness, intrinsic and extrinsic test bias: statistical models of intrinsic test bias

RECOMMENDED BOOKS:

Bornboom, D. (2005). *Measuring the mind: Conceptual issues in contemporary psychometrics*. UK: Cambridge University Press.

Kalina, P. (1998). *The new psychometrics: Sciences, psychology and measurement*. London & New York: Routledge.

Mitchell, J. (1990). *An Introduction to the logic of psychological measurement*. Hillsdale, MI: Erlbaum.

Rust, J., & Golombok, S. (2009). *Modern psychometrics: The science of psychological assessment*. London and New York: Routledge.

MA, SPECIALIZATION IN POSITIVE PSYCHOLOGY

Paper I - Foundations of Positive Psychology

Course Contents:

UNIT-I

Introduction: Psychology from a positive perspective, Eastern and Western perspectives on Positive Psychology, Building bridges between Humanistic and Positive Psychology.

UNIT-II

The principles of pleasure: Understanding positive affect, positive emotions, happiness and well-being, Complementary roles of eudaimonia and hedonia, Making emotional experiences: Emotion-focused coping, emotional intelligence, emotional story telling.

UNIT-III

Positive personality traits and strengths: Classifications and measures of strengths and positive outcomes, Self-efficacy, optimism and hope.

UNIT-IV

Positive cognitive states and processes: Wisdom and courage: Characteristics of the wise and the brave, Mindfulness, flow, and spirituality: In search of the optimal experiences.

RECOMMENDED BOOKS:

Baumgardner, S. R., & Crothers, M. K. (2009). *Positive psychology*. New Delhi: Pearson Education.

David, S. A., Boniswell, I., & Ayers, A. C. (Eds.) (2013). *The Oxford handbook of happiness*. Oxford, UK: Oxford University Press.

Kumar, U., Archana, & Prakash, V. (Eds.) (2015). *Positive psychology – Applications in work, health and well-being*. Delhi & Chennai: Pearson.

Lopez, S. J., & Snyder, C. R. (2011). *The Oxford handbook of positive psychology*. New York: Oxford University Press.

Peterson, C. (2006). *A primer in positive psychology*. New York: Oxford University Press.

Seligman, M. P. (2002). *Authentic happiness*. New York: Free Press.

Special Issue on Positive Psychology (2014). *Psychological Studies*, 59(2).

Paper II - Positive Psychology in Cultural and Social Context

Course Contents:

UNIT-I

Positive Psychology in cultural context: The role of culture in developing strengths and living well, Stages of life and positive living.

UNIT-II

Pro-social behaviour: Empathy and egotism: Portals to altruism, Gratitude and forgiveness: Attachment, love and flourishing relationships.

UNIT-III

Understanding and changing human behaviour: Balanced conceptualizations of mental health and behaviour, Preventing the bad and promoting the good.

UNIT-IV

Positive environments: Positive schooling and good work, the power and practice of gratitude, positive aging

RECOMMENDED BOOKS:

- Baumgardner, S. R., & Crothers, M. K. (2009). *Positive psychology*. New Delhi: Pearson Education.
- Kumar, U., Archana, & Prakash, V. (Eds.) (2015). *Positive psychology - applications in work, health and well-being*. Delhi & Chennai: Pearson.
- Lopez, S. J., & Snyder, C. R. (2011). *The Oxford handbook of positive psychology*. New York: Oxford University Press.
- Seligman, M. P. (2002). *Authentic happiness*. New York: Free Press.
- Special Issue on Positive Psychology (2014). *Psychological Studies*, 59(2).

E-COMPUTER APPLICATIONS IN PSYCHOLOGY

Paper-I: Computer Application

Course Contents:

UNIT-I

Use of computer software in psychology

Experimental/Laboratory control: Use of computers in designing experiments, control of relevant variables

UNIT-II

Clinical/Child Psychology: Computer mediated psychological testing, Virtual psychotherapy, computer assisted counselor training, neuropsychological assessment - MRI, PET, computerized report writing, effects of computer/internet on mental health

UNIT-III

Use of computer software in psychology: Cognitive Psychology - GPS, Artificial intelligence, expert systems, simulation/virtual reality

UNIT-IV

Organizational: Selection and placement - computer assisted assessment for recruitment, appraisal and screening. Simulated training programs

RECOMMENDED BOOKS:

Baskin, D. (1990). Computer applications in psychiatry and psychology. London: Routledge -Taylor-Francis.

Rajaraman V. (1999). Fundamentals of Computers. New Delhi: Prentice Hall, India.

Cramlish, C. (1998). The ABC's of Internet. New Delhi: BPB Publications. Manovigyanik software developed by Psy-com, B-4, 80/2 SJE, New Delhi-29.

Paper-II Practical

UNIT-I

Using SPSS for data entry

UNIT-II

For analysing data - basic statistical procedures (UNIVARIATE & MULTIVARIATE)

UNIT-III

For analysing data - non-parametric techniques, for creating bars, charts, and figures, Interpretation of SPSS OUPUT FILES.

UNIT-IV

Use of internet resources for psychology: ERIC database, Psych Lit, Psych INFO, www.sciencedirect.com

RECOMMENDED BOOKS:

Rajaraman V. (1999). Fundamentals of Computers. New Delhi: Prentice Hall, India.

Cramlish, C. (1998). The ABC's of Internet. New Delhi: BPB Publications. Manovigyanik software developed by Psy-com, B-4, 80/2 SJE, New Delhi-29.

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PS-20
20-2-19

Lekshmi
20-3-19

Pranav
20-3-19

20/3/19

Manish
Univ. Dept. of Psychology,
B.A.B.U. Meer.

Each academic year will be divided into two semesters. In each Semester there will be 15 working teaching weeks (minimum 20 working days). The remaining 5 weeks will be reserved for various activities.

**Post Graduate Degree Course
under CBCS in Urdu**

December 2011

September, 2012

Each paper is of 100 marks (40 marks for MCQs, 30 marks for short answer type, 10 marks for written exam and 20 for continuous internal assessment). There will be five Qs in each paper.

Ist Semester

Each academic year will be divided into two semesters. In each Semester there will be 15 working teaching weeks (minimum 90 working days) and the remaining 5 weeks will be utilized for conduct of examination and evaluation purpose. Ist Semester will be normally from July to December and Second from January to June. There will be four papers in Ist Semester, five papers in II and III semesters and four papers in IV semester carrying 100 marks each (70 marks for written exam and 30 for continuous internal assessment). There will be five Units in each paper.

CCIV (GHAIR AFSANVI NASR)

CC-I (DASTAN)

Paper 101

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

Part A – Ten objective type Questions – 2 x 10 = 20 Marks
(Two Questions from each Unit)

Part B – Five Questions (Four to be answered) – 5 x 4 = 20 Marks
One short answer type Question from each Unit

Part C – Five Questions (Three to be answered) – 10 x 3 = 30 Marks
One long answer type Question from each Unit

Part D – Internal Assessment – 20 Marks

Ist Semester

Course Subjects

Syllabus:

Unit-1 – Feroz-Dastan par (10 Marks)

Unit-2 – Sabitza par (10 Marks)

Unit-3 – Badi-e-Nabir par (10 Marks)

Unit-4 – Begum-e-Mahal par (10 Marks)

Unit-5 – Akhbar-e-Khan Jahan par (10 Marks)

Books:

CC I (DASTAN)

CCII (NOVEL)

CC III (MUKHTASAR AFSANA)

CCIV (GHAIR AFSANVI NASR)

Urdu mein Afsana

Neel M. Chowdhry

Munir Ahmad Khan

Dastan ki Shariat (Volume-I)

S.R. Farooqui

CC- II (NOVEL)

Paper : 102

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered) - $5 \times 4 = 20$ Marks
One short type Question from each Unit
- Part C - Five Questions (Three to be answered)- $10 \times 3 = 30$ Marks
One long answer type question from each unit
- Part D - Internal Assessment 30 Marks

Syllabus:

- Unit-1 Novel ka Fan aur Urdu mein Novel Nigari ka Irtequa
- Unit-2 Taubatun Nosuh by Nazir Ahmad
- Unit-3 Umrao Jaan Ada by Mirza Hadi Ruswa
- Unit-4 Gaudaan by Prem Chand
- Unit-5 Aangan by Khadija Mastoor

Books For Reference:

- Biswin Sadi mein Urdu Novel - Yusuf Sarmast
- Nazir Ahmad ki Novel Nigari - Ejaz Ali Arshad
- Prem Chand ki Novel Nigari - Qumar Rais
- Umrao Jaan : Ek Mutaleya - Aadam Sheikh
- Urdu ke Antharah Novel - Md. Hamid Ali Khan
- Urdu Novel Aaghaaz-o-Irtequa - Azimush Shan Siddiqui

Yusuf Sarmast
(Prof. & Lecturer)
Lahore

Ejaz Ali Arshad
(Prof. & Lecturer)
Lahore

Qumar Rais
(Prof. & Lecturer)
Lahore

Aadam Sheikh
(Prof. & Lecturer)
Lahore

Md. Hamid Ali Khan
(Prof. & Lecturer)
Lahore

Azimush Shan Siddiqui
(Prof. & Lecturer)
Lahore

Dr. A. S. Khan
(Prof. & Lecturer)
Lahore

CC - III (MUKHTASAR AFSANA)

Paper : 103

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered) - $5 \times 4 = 20$ Marks
One Short answer type Question from each Unit
- Part C - Five Questions (Three to be answered)- $10 \times 3 = 30$ Marks
One long answer type question from each Unit
- Part D - Internal Assessment 30 Marks

Syllabus :

- Unit -1 Mukhtasar Afsane ka Fan aur Urdu mein Mukhtasar Afsana
Nigari ki Rewayat
- Unit -2 Kafan (Prem Chand), Apne Dukh Mujhe Dedo (Bedi)
Do Farlang Lambi Sarak(Krishna Chander), Sanobar ke saaye
(Hijab Imtiaz Ali)
- Unit -3 Hatak (Saadat Hassan Manto),Chauthi ka joda (Asmat Chughtai),
Dain (Shakeela Akhtar)
- Unit -4 Badsoorat Ladki (Sohail Arimabadi), Babalog (Ghyan Ahmad Gaddi)
Ek Darakht ka Qatal (Akhtar Ovaisvi), Lachka (Sheen Muzaffarpuri)
- Unit -5 Karman (Qurratul Ain Haider), Bemaam Galiyan (Kalaam Haidri),
Akhiri Koshish (Hayatullah Ansari)

Books For Reference:

- Dastan se Afsane Tak - Waqar Hazmi
- Naya Afsana, Masael aur Imkanat - Qamar Rais
- Urdu Afsana : Rewaynt aur Masael - Gopi Chand Narang
- Urdu Fiction aur Teesri Aankh - Wahab Ashrafi
- Urdu Fiction ke Chand Zaviye - Ejaz Ali Arshad
- Urdu Fiction ki Tanqeed - Irteza Karim

(Handwritten signatures and notes)

(Signature: Waqar Hazmi)
(Signature: Qamar Rais)
(Signature: Gopi Chand Narang)
(Signature: Wahab Ashrafi)
(Signature: Ejaz Ali Arshad)
(Signature: Irteza Karim)

(Signature: Hayatullah Ansari)
(Signature: Kalaam Haidri)
(Signature: Sheen Muzaffarpuri)
(Signature: Akhtar Ovaisvi)
(Signature: Ghyan Ahmad Gaddi)
(Signature: Sohail Arimabadi)

(Signature: Hijab Imtiaz Ali)
(Signature: Bedi)
(Signature: Prem Chand)

(Signature: Saadat Hassan Manto)
(Signature: Asmat Chughtai)
(Signature: Shakeela Akhtar)

(Signature: Kalaam Haidri)
(Signature: Qurratul Ain Haider)

(Signature: Hayatullah Ansari)
(Signature: Irteza Karim)

CC - V (Urdu Ghazal)

Paper : 201

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

Part A - Ten objective type Questions - 2 x 10 = 20 Marks
(Two Questions from each Unit)

Part B - Five Questions (Four to be answered) - 5 x 4 = 20 Marks
(One short answer type Question from each Unit)

Part C - Five Questions (Three to be answered) - 10 x 3 = 30 Marks
(One long answer type Question from each Unit)

Part D - Internal Assessment - 20 Marks
Syllabus:

Unit - 1 Ghazal ke tarika aur Ghazal ke Mukhtalaf Dastan, Akhde Haste aur Urdu Ghazal

Unit - 2 CC 5 (Urdu Ghazal)

CC 6 (Urdu Nazm)

CC 7 (Masnavi)

CC 8 (Qaseeda & Marsia)

CC 9 (Tahqeeque)

Unit - 3 Ghazal:
(i) Naqaq karyahi hai kisko shaki-e-fulvesht hai...

(ii) Koi zamindar nahin hai.....

Memorize:

(i) yeh jo hum hai main tere qadar hai tohhe yeh ho ke na
yaad hai

(ii) Aab yeho karo nahin beta

Definite:

(i) Zabani hain do to ho jaye firda's dil ko

(ii) Ghazab kiye, tare wade pe zulfon kiye

CC - V (Urdu Ghazal)

Paper : 201

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered) - $5 \times 4 = 20$ Marks
One short answer type Question from each Unit
- Part C - Five Question (Three to be answered)- $10 \times 3 = 30$ Marks
One long answer type question from each Unit
- Part D- Internal Assessment 30 Marks

Syllabus:

Unit -1 Ghazal ke fan aur Urdu mein Ghazal Goi ki Rewayat, Ghazal ke Mukhtalif Dabistan, Abde Hazir mein Urdu Ghazal

Unit -2 **Wali:**

- (i) Yadd karna har ghadi us yaar ka
(ii) Muffisi sab bahar khoti hai.....

Meer:

- (i) Faqeerana aaye sada kar chale
(ii) Hamare aage tera jab kaso ne naam liya

Dard:

- (i) Jag mein aakar idhar udhar dekha.....
(ii) Tuhmatein chand apne zimme dhar chale

Unit -3

Ghalib:

- (i) Naqsh faryadi hai kiski shoki-e-tahreer ka.....
(ii) Koi ummid bar nahin aati.....

Momin:

- (i) wo jo hum me tum me qarar tha tumbe yaad ho ke na yaad ho
(ii) Asar usko zara nahi hota

Daagh:

- (i) Zaban hila do to ho jaye faisla dil ka
(ii) Ghazab kiya tere wade pe aetbar kiya

CC - CC - VII (Masnavi)

Paper : 203

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered)- $5 \times 4 = 20$
One short answer type Question from each Unit
- Part C - Five Question (Three to be answered)- $10 \times 3 = 30$
One long answer type question from each Unit
- Part D- Internal Assessment 30 Marks

Syllabus:

- Unit -1 Masnavi ka Fan aur Urdu Masnavi ka Ahad ba Ahad Irteqaa
Unit -2 Qutub Mushtari by Mulla Wajhi
Unit -3 Sehral Bayan by Meer Hasan
Unit -4 Gulzar-e-Naseem by Daya Shankar Naseem
Unit -5 Soz-o-Gudaz by Shauque Neemvi

Books For Reference:

- Masnavi ka Fan aur Urdu Masnaviyan - Najmal Huda
Urdu Masnavi : Shumali Hind Mein - Gyan Chand jain
Urdu Masnavi ka Irteqaa - Abdul Qadir Sarwari
Urdu ki teen Masnaviyan - Khan Rasheed
Soz-o-Gudaz - Muzaffar Iqbal (Edited)
Qutub Mushtari - Wahab Ashrafi (Edited)

Masnavi
(Part 1 & 2) - Huda
Subject - English

Masnavi
(Part 1 & 2) - Huda
Subject - English

Masnavi
(Part 1 & 2) - Huda
Subject - English

Masnavi
(Part 1 & 2) - Huda
Subject - English

Masnavi
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Subject - English

Masnavi
(Part 1 & 2) - Huda
Subject - English

Masnavi
(Part 1 & 2) - Huda

P. O. Board, Dept. of Urdu
A. I. College, Durgam

CC - X (Tanqeed)

Paper : 301

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
 (Two Questions from each Unit)
 Part B - Five Questions (Four to be answered) - $5 \times 4 = 20$
 One short answer type Question from each Unit
 Part C - Five Questions (Three to be answered) - $10 \times 3 = 30$
 One long answer type question from each Unit
 Part D - Interview - 20 Marks

3rd Semester

Course Subjects

CC 10 (TANQEED)

CC 11 (TAHREEKAT-O-RUJHANAT)

CC 12 (BIHAR KA ADABI DABISTAN)

CC13(LESANIYAT aur AROOZ-O-BALAGHAT)

CC 14 (STUDY OF IQBAL & GHALIB)

CC - X (Tanqeed)

Paper : 301

There will be five Units in this paper. The question paper will cover all the Units with the following pattern;

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered) - $5 \times 4 = 20$
One short answer type Question from each Unit
- Part C - Five Question (Three to be answered) - $10 \times 3 = 30$
One long answer type question from each Unit
- Part D- Internal Assessment 30 Marks

Syllabus:

- Unit -1 Urdu mein Tazkera Nigari ki Rewayat with special reference to Aab-e-Hayat.
- Unit -2 Tanqeed aur Mokhtalif Dabistan Tanqeed.
- Unit -3 Muqadma-e-Sher-o-Shayri by Khawja Altaf Husain Hali
- Unit -4 Mawazna-e-Anees-o-Dabeer by Shibli Nomani
- Unit -5 Amli Tanqeed Vol-I by Kalimuddin Ahmad

Books For Reference:

- Urdu Tanqeed Par ek Nazar - Kalimuddin Ahmad
- Amali Inteqadiyat - Syed Md. Aquil Rizvi
- Urdu ka Dabistan-e-Tanqeed - Saleem Akhtar
- Jadeed Urdu Tanqeed: Usool-o-Nazariyat - Sharib Radaulvi
- Funne Tanqeed aur Tanqeedi Mazameen - Najmul Hoda

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(Prof. A. M. Husain)
Subject: Urdu

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Subject: Urdu

CC- XI (Tahreekat-o-Rujhanat)

Paper : 302

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

Part A -	Ten objective type Questions (Two Questions from each Unit)	-	$2 \times 10 = 20$ Marks
Part B -	Five Question (Four to be answered)- One short answer type Question from each Unit	-	$5 \times 4 = 20$
Part C -	Five Question (Three to be answered)- One long answer type question from each Unit	-	$10 \times 3 = 30$
Part D-	Internal Assessment		30 Marks

Syllabus:

Unit -1	Urdu ki Ibtidai Nasho-numa mein Sufia-e-Keram aur Dakan ki Khidmat
Unit -2	Fort William College
Unit -3	Aligarh Tahreek
Unit -4	Taraqqi Pasand Tahreek with special reference to poetry, fiction and criticism
Unit -5	(a) Jadeediat (b) Mabaad-e-Jadeediyat

Books For Reference:

Urdu ki Ibtidai Nasho-numa mein Sufia-e-keram ka Hissa	-	Abdul Haque
Urdu ki Adabi Tahrekeen	-	Anwar Sadeed
Fort William College ki Adabi Khidmaat	-	Obaida Begam
Sir Syed aur unke Namwar Rofaqua	-	Syed Abdullah
Taraqqi Pasand Adab ka Pachhas sala safar	-	Qamar Rais / Aashoor Kazmi
Urdu mein Taraqqi Pasand Adabi Tahreek	-	Khaleelur Rahman Azmi
Jadeediyat ki Jamaliyat	-	Lutfur Rahman
Mabaad-e-Jadeediyat: Muzmerat-o-Mumkenat	-	Wahab Ashrafi

Handwritten signatures and notes are present at the bottom of the page, including names like 'Abdul Haque', 'Anwar Sadeed', 'Obaida Begam', 'Syed Abdullah', 'Qamar Rais / Aashoor Kazmi', 'Khaleelur Rahman Azmi', 'Lutfur Rahman', and 'Wahab Ashrafi'. There are also some illegible handwritten notes and dates.

CC-XII (Bihar ka Adabi Dabistan)

Paper : 303

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

Part A -	Ten objective type Questions	-	$2 \times 10 = 20$ Marks
	(Two Questions from each Unit)		
Part B -	Five Question (Four to be answered)-		$5 \times 4 = 20$
	One short answer type Question from each Unit		
Part C -	Five Question (Three to be answered)-		$10 \times 3 = 30$
	One long answer type question from each Unit		
Part D-	Internal Assessment		30 Marks

Syllabus:

Unit -1	Dabistan-e-Bihar ki Tashkeel-o-Tameer
Unit -2	Bihar mein Urdu Shaeri with special reference to Rasikh (Kalim Ajiz, Hasa Nayeem)
Unit -3	Bihar mein Urdu Fiction with special reference to Rashidatunnisa (Islahunnisa), Akhtar Orainvi (Koilewala), Sohail Azimabad (Bejad ke Prude)
Unit -4	Bihar mein Urdu Tanqeed with special reference to Imdad Imam Asar (Kashiful Haqaeque), Kalimuddin Ahmad (Urdu Shaeri Per Ek Nazar), Wahab Ashrafi (Aagahi ka Manzar Nama), Ejaz Ali Arshad (Bihar me Urdu Tanqid)
Unit -5	Bihar mein Ghair Afsanvi Nasr with special reference to Anjum Manpuri (Kiraye ki Tamtam), Syed Md. Husnain (Hero), Jahan Khushboo hi Khushboo thi (Kaleem Ajiz), Shibli (Syed Suleman Nadvi)

Books For Reference:

Bihar ki Bahaar	-	Ejaz Ali Arshad
Akhtar Shanasi	-	Arshad Masood Hashmi
Bihar mein Urdu Nazm Nigari	-	Qamar Azam Hashmi
Bihar mein Urdu Tazkeranigari	-	Mansoor Alam
Anjum Manpuri	-	Izhar Khizar
Inshaiya aur Chand Inshaiye	-	Syed Md. Husnain
Bihar me Novel Nigari 1980 ke Baad -	-	Rais Anwar
Aasar-e-Asar	-	Akhtar Quadri

CC-XIII (Lesaniyat aur Arooz-o-Balaghat)

Paper : 304

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

Part A -	Ten objective type Questions	-	2 x 10 = 20 Marks
	(Two Questions form each Unit)		
Part B -	Five Question (Four to be answered)-	5 x 4 = 20	
	One short answer type Question from each Unit		
Part C -	Five Question (Three to be answered)-	10 x 3 = 30	
	One long answer type question from each Unit		
Part D-	Internal Assessment		30 Marks

Syllabus:

Unit -1	Lesaniyat ki tareef, Iske दौरa-e-kaar aur deegar uloom se rishta
Unit -2	(a) Zubaanon ke Aalami Khandaan (b) Zubaanon ka Hind Aaryai Khandaan
Unit -3	(a) Urdu zaban ki ibteda ke mukhtalif nazariyat with special reference to Masood Hussain Khan, Mahmood Shirani and Mohiuddin Qadri Zor (b) Zaban ki iradi aur ghair iradi tashkeel, Sauti Taghaiur-o-Tabaddul, Waza-e-Istelahat, Sabqe aur Lahqe
Unit -4	Balaghat: Tareef aur Aqsaam-Tashbeeh, Isteyara, Kanaya, Majaz, Talmeeh & Takrar, Mubalgha, Gholu, Husn-e-Taleel, Tajahul-e-Aarfana, Laf-o-Nashr, Maratunnazeer
Unit -5	Arooz: Rukn, Sabab, Watad, Fasla, Wazn, Bahar (Salim & Mazahif), Salim Bahron ki Mukhtalif Qiamein aur Taqtef

Books For Reference:

Muqadma-e-Tareekh-e-Zaban-e-Urdu -	Masood Hussain Khan
Zaban aur Ilm-e-Zaban	- Abdul Qadir Sarwari
Urdu ki Lesani Tashkeel	- Mirza Khalil Beg
Waza-e-Istalahat	- Waheeduddin Saleem
Jadeed Ilmul Balaghat	- Abdul Majeed
Ilmul Arooz	- S.M Sadruddin

(Handwritten signatures and notes of various scholars and institutions, including names like Masood Hussain Khan, Abdul Qadir Sarwari, Mirza Khalil Beg, Waheeduddin Saleem, Abdul Majeed, S.M Sadruddin, and others.)

CC- XIV (Study of IQBAL & GHALIB)

Paper : 305

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered)- $5 \times 4 = 20$
One short answer type Question from each Unit
- Part C - Five Question (Three to be answered)- $10 \times 3 = 30$
One long answer type question from each Unit
- Part D- Internal Assessment 30 Marks

Syllabus:

- Unit -1 Ghalib ki Ghazal Gai (Sahl gai, Muskil Pasaandi, Buland Khyali, Taskeek)
- Unit -2 Ghalib ki Maktoob Nigari with special reference to banam Meer Mehdi Majrooh & Mirza Tufta
- Unit -3 Iqbal, Shakhsiyat aur Ahwal-o-Aasaar
- Unit -4 Iqbal ke nazariyat-o-afkar (Khudi, Mard-e-Momin, Ishq, Jamhuriyat, Fonoon-e-Latifa)
- Unit -5 Iqbal ki paanch nazmein (1. Naya Shiwala, 2.Saqee Nama, 3. Masjid-e-Qurtuba, 4. Zauq-o-Shauq, 5. Jibril-o-Iblis)

Books For Reference:

- Rooh-e-Iqbal - Yusuf Hussain Khan
- Iqbal ka Nezam-e-Fan - Abdul Moghni
- Iqbal Shair aur Danishwar - Mumtaz Ahmad Khan
- Fikr-e-Iqbal - Khalifa Abdul Hakim
- Iqbal : Asari Tanazur - Manzar Eijaz
- Iqbal : Ek Mutaleya - Kalimuddin Ahmad
- Yaadgar-e-Ghalib - Altaf Husain Hali
- Ghalib Shanasi - Zee-e-Ansari
- Ahwal-e-Ghalib - Mokhtaruddin Ahmad Arzoo

Handwritten signatures and notes are present at the bottom of the page, including:

- Signature: (Prof. A. H. Ansari)
- Signature: (Prof. A. H. Ansari)
- Signature: (Prof. A. H. Ansari)
- Signature: (Prof. A. H. Ansari)
- Signature: (Prof. A. H. Ansari)
- Signature: (Prof. A. H. Ansari)

At the bottom center, there is a note:

Dr. A. H. Ansari (Principal, D. A. College, Amritsar)

EC-1 (A) (Asari Adab)

Paper : 401

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A – Ten objective type Questions – 2 x 10 = 20 Marks
 (Two Questions from each Unit)
- Part B – Five Questions (Four to be answered) – 5 x 4 = 20
 One short answer type Question from each Unit
- Part C – Five Questions (Three to be answered) – 10 x 3 = 30
 One long answer type question from each Unit
- Part D – Internal Assessment – 30 Marks

Syllabus:

Unit-1: Shari'ah, Ahlul-Bayt, Imam Ali (K) (Asari Adab), Imam Ali (K) (Asari Adab)

Unit-2: Novel with (Asari Adab) (Asari Adab)

Unit-3: (Asari Adab) (Asari Adab)

Unit-4: (Asari Adab) (Asari Adab)

Unit-5: (Asari Adab) (Asari Adab)

4th Semester**Course Subjects**

EC 1 (A) (ASARI ADAB)

EC 1 (B) (SAHAFAT)

EC 1 (C) (TARJUMA NIGARI)

EC 1 (D) (TASA WWUF)

EC 1 (E) (DRAMA)

Any one of the above will be selected

EC-1 (A) (Asari Adab)

Paper : 401

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

Part A -	Ten objective type Questions	-	2 x 10 = 20 Marks
	(Two Questions from each Unit)		
Part B -	Five Question (Four to be answered)	-	5 x 4 = 20
	One short answer type Question from each Unit		
Part C -	Five Question (Three to be answered)	-	10 x 3 = 30
	One long answer type question from each Unit		
Part D-	Internal Assessment		30 Marks

Syllabus:

- Unit -1 Shayri with special reference to shaharyaar, Mazhar Imam, Perween Shakir, Sultan Akhtar
- Unit -2 Novel with special reference to Abdus Samad (do gaz zameen), Makan (Paigan safaque), Aiwan-e-Ghalib (Jeelani Bano), Forat (Husainul Haque)
- Unit -3 Afiana with special reference to Bade Saba ka Interzar (Syed Md Ashraf), Ek Chhota sa jahannum (Sajise Mausam (Ahmad Yusuf)
- Unit -4 Tanz-o-Mazah with special reference to Qata Kalam (Mujtaba Hussain), Zarguzasht (Mushtaque Yusufi), Filhaal (Yusuf Nazim), Wahiyat (Raza Naqvi Wahi)
- Unit -5 Tanqeed with special reference to Shamsurrahman Farooqui, Gopi Chand Narang, Shakeelur Rahman

Books For Reference:

Hamasar Urdu Novel	-	Qamar Rais
Urdu Fiction : Hindustan mein	-	Hussainul Haque
Nai Urdu Ghazal	-	Sarwarul Hoda
Beeswain Sadi mein Urdu Tanz-o-Mazah	-	Nami Ansari
Humasar Urdu Shayri : Chan Zaviye	-	Ejaz Ali Arshad
Bihar mein Urdu Tanz-o-Zarafat	-	Sultan Azad
Shakeelur Rahman Ki Ghalib Shanasi	-	Arshad Masood Hashmi

(Handwritten signatures and notes)

(Prof. Dr. M. Aslam)
(Prof. Dr. M. Aslam)
(Prof. Dr. M. Aslam)

(Prof. Dr. M. Aslam)
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(Prof. Dr. M. Aslam)
(Prof. Dr. M. Aslam)
(Prof. Dr. M. Aslam)

EC - I (B) (Sahafat)

Paper : 401

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered) - $5 \times 4 = 20$
One short answer type Question from each Unit
- Part C - Five Question (Three to be answered) - $10 \times 3 = 30$
One long answer type question from each Unit
- Part D- Internal Assessment 30 Marks

Syllabus:

- Syllabus:**
- Unit -1 Sahafat aur uski Mubadiyat
- Unit -2 Urdu Sahafat ki Tareef
- Unit -3 Bihar mein Urdu Sahafat
- Unit -4 Idaria Nigari, Column Nigari, aur Feature Nigari
- Unit -5 Amlī Mashque (Practical)

Books For Reference:

Mubadiyat-e-Sahafat	:	Jawed Hayat
Bihar mein Urdu Sahafat	:	Syed Ahmad Quadri
Rahbar-e-Akhbar Naweesi	:	Iqbal Quadri
Sahafat Kyn Hai	:	Iqbal Hussain
Zaraye Tarseel-o-Iblagh	:	Syed Shamim Ahmad

Handwritten notes and signatures are present below the reference list, including:

- Handwritten signatures and names.
- References to "P. 401" and "College Program".
- Handwritten text in Urdu and English, including "Sahafat" and "Mubadiyat".

EC-I (C) (Tarjuma Nigari)

Paper : 401

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

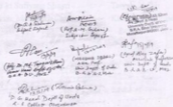
- Part A - Ten objective type Questions - $2 \times 10 = 20$ Marks
(Two Questions from each Unit)
- Part B - Five Question (Four to be answered) - $5 \times 4 = 20$
One short answer type Question from each Unit
- Part C - Five Question (Three to be answered) - $10 \times 3 = 30$
One long answer type question from each Unit
- Part D- Internal Assessment 30 Marks

Syllabus:

- Unit -1 Tarjume ka Fan aur Rewayat
- Unit -2 Tarjuma ki Ahmiyat wo Afadiyat
- Unit -3 Farsi se Urdu Tarjuma & Vice Versa
- Unit -4 Angrezi se Urdu Tarjuma & Vice Versa
- Unit -5 Hindi se Urdu Tarjuma & Vice Versa

Books For Reference:

- Tarjuma ka Fan aur Rewayat : Qamar Rais
- Tarjuma ke Buniyadi Masael : Zoe Ansari
- Urdu Main Tarjuma Nigari : Mushtaque Quadri
- Fann-e-Tarjuma Nigari : Khaliq Anjum



EC-I (D) (Tasawwuf)

Paper : 401

There will be five Units in this paper. The question paper will cover all the Units with the following pattern:

Part A -	Ten objective type Questions	-	2 x 10 = 20 Marks
	(Two Questions from each Unit)		
Part B -	Five Question (Four to be answered)	-	5 x 4 = 20
	One short answer type Question from each Unit		
Part C -	Five Question (Three to be answered)	-	10 x 3 = 30
	One long answer type question from each Unit		
Part D-	Internal Assessment		30 Marks

Syllabus:

- Unit -1 Tasawwuf kya hai
 Unit -2 Tasawwuf Ahad ba Ahad
 Unit -3 Aham Soofiya-e-Karaam (Abdul Qadir Gilani, Khwaja Gharib Nawaz, Neizamuddin Aulia, Sharfuddin Yahya Maneri)
 Unit -4 Tasawwuf ke Nazariyat (Wahdatul Wajood, Wahdatul Shahood, Ishq / Prem Marg)
 Unit -5 Urdu Shayri mein Tasawwuf

Books For Reference:

Kashful Mahjoob	:	Ali Hajweri
Ahyaal Uloom	:	Sheikh Mohiuddin Alwi
Tafheem Tasawwuf	:	Hussainul Haque
Bihar ki Sufiyana Shayri	:	Taiyab Abdali
Tareekh, Mashaekh Chist	:	Khalceque Ahmad Nizami

Kashful Mahjoob (Ali Hajweri)

 Ahyaal Uloom (Sheikh Mohiuddin Alwi)

 Tafheem Tasawwuf (Hussainul Haque)

 Bihar ki Sufiyana Shayri (Taiyab Abdali)

 Tareekh, Mashaekh Chist (Khalceque Ahmad Nizami)

 (In the original image, there are several handwritten signatures and notes in Urdu/Hindi, some mentioning 'Dr. A. H. Khan', 'Dr. M. I. Khan', 'Dr. S. I. Khan', and 'Dr. S. H. Khan', along with dates and locations like 'Lahore' and 'Karachi'. The notes are somewhat illegible due to the handwriting.)

EC -II (Project & Presentation)

Paper : 402

Group (A) Theory

Assignments will be given on different topics to each student as a project work. The project will be of fifty marks.

Group (B) Practical

Each Student have to make presentation on the topic of their project. This paper will be of fifty marks.

Besides the presentation each student have to be trained in Urdu Computing.

EC II**Project work and Practical****50 Marks each**

EC -II (Project & Presentation)

Paper : 402

Group (A) Theory

Assignment will be given on different topics to each student as a project work. The project will be of fifty marks.

Group (B) Practical

Each Student have to make presentation on the topic of their project, This paper will be of fifty marks.

Besides the presentation each student have to be trained in Urdu Computing.

M. A. Khan
 (Prof. & Lecturer)
 Subject: English

Ahmed Raza
 (Prof. & Lecturer)
 Subject: English

U.R. Khan
 (Prof. & Lecturer)
 Subject: English

Ali Raza
 (Prof. & Lecturer)
 Subject: English

Rafiq Raza
 (Prof. & Lecturer)
 Subject: English

Rafiq Raza
 (Prof. & Lecturer)
 Subject: English

Rafiq Raza
 (Prof. & Lecturer)
 Subject: English

GE 1

**Student of any faculty can opt CC-5 as
general elective**

Primal
7/3/19
University Professor & Head
Department of Botany
B. R. A. Bihar University
Muzaffarpur

M.Sc. Botany
(Semester-I)

MBOTCC-1: Physiology, Mycology and Bryology (3 Credits)

Time: 3hrs

Marks: 70

The question paper will consist of 7 questions divided into 3 sections.
Section A: Question No. 1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).
Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (one from each Unit) and students will have to attempt only four questions (4 x 5=20marks).
Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

Thallos organisation of algae, Cell ultra-structure and Reproduction: Vegetative, asexual and sexual
Role of pigments, reserve food, cell wall, flagella, eye spot and pyrenoids in classification and evolution of algae
Use of algae as food, fuel and in industry
Indian phytoplankton and their contributions

Unit II

Salient features of Prochlorophyta, Chlorophyta, Charophyta, Xanthophyta, Bacillariophyta, Phaeophyta and Rhodophyta

Unit III

Lichen: General Account, Classification, Distribution, Morphology, Anatomy, Reproduction & Economic importance
General characters of fungi, cell ultra structure, unicellular and multicellular organization, cell wall composition, nutrition (saprobic, biotrophic, symbiotic), reproduction: vegetative, asexual and sexual; heterothallicism, heterokaryosis and parasexuality
Classification of fungi: Recent trends

Unit IV

Brief account of Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina, Deuteromycotina
Phylogeny of fungi
Fungi in industry, medicine and as food
Fungi as biocontrol agents

Unit V

Classification and general features of Marchantioides and Jungermannioides, Anthocerosales, Sphagnales and Polytrichales
Evolutionary trends in sporephytes
Vegetative propagation and permeation
Mechanism of inhibition of capsules and dispersal of spores
Conducting tissue in Bryophytes
Economic importance of Bryophytes

Primal 7/3/19

Primal 7/3/19

Primal 7/3/19

Primal 14/4/19

Primal 7/3/19

Primal 7/12/19

Primal 7/3/19

M.Sc. Botany
(Semester-I)

MBOTCC-2: Microbiology and Plant Pathology (5 Credits)

Time: 3hrs

Marks: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No. 1 will be compulsory comprising ten objective types questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer types questions (one from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer types questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

General introduction; History and scope of microbiology; theory of spontaneous generation
Methods of microbiology: Sterilization-Different types of sterilization (moist heat, dry heat, filtration, radiation and chemicals)
Diversity of microorganisms: Archaea, Bacteria, Cyanobacteria, Phytoplasmata, Rickettsia

Unit II

Structure of bacteria: Ultra structure of Gram positive and Gram negative bacteria; reproduction (vegetative, asexual and genetic recombination); Nutritional classification of bacteria; economic importance of bacteria

Viruses: Nature, characteristics and ultrastructure of Viruses (TMV and Bacteriophages), multiplication (Lytic and Lysogenic cycles) and transmission of viruses; economic importance; a brief account of Viroids and Prions

Unit III

Agriculture Microbiology: Biological nitrogen fixation and Biofertilizer
Industrial Microbiology: Industrial production of organic acids (citric acid), antibiotics (penicillin) and enzymes (amylase)

Unit IV

Classification of Plant disease and appearance of symptoms due to different microbes
Role of enzyme and toxin in pathogenesis
Effect of infection on the physiology of host with special reference to photosynthesis, respiration, nitrogen metabolism and osmoregulation
Host defence mechanism with special reference to structural and biochemical defence

Unit V

Seed pathology with special reference to seed-borne mycelioflora, mycotoxin and its hazard Quarantine regulation and seed certification
Rhizosphere and rhizoplane microflora and its significance in soil borne disease
Etiology, symptoms and control measures of the following plant diseases:
Rust of linseed, Leaf blight of maize, Tikka disease of groundnut, Bunchy top of banana, black tip of mango, Yellow vein mosaic of bhindi, Little leaf of brinjal and Citrus canker

Answered
7/3/19

P. N. S. S.
7/3/19

7/3/19

7/3/19

7/3/19

M.Sc. Botany
(Semester-I)

MBOTCC-II Pteridophyta, Gymnosperms & Paleobotany (5 Credits)

Time: 3hrs

Marks: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No. 1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (two from each Unit) and student will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer type questions are to be set (two from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit-I

Classification of Pteridophytes

Detailed general features: vegetative and reproductive, with special reference to development, characterization, position and kind of protection provided to the spore producing organs of the sporophytes and sexuality of the gametophytes in the following classes/orders.

Polypodiids - Polypodales

Lycopodiids - Lycopodiales, Selaginellales and Isoetes

Special discussion has to be made about:

Stelar evolution within Lycopodiales

Gametophytic variations and evolution in Lycopodiales and

Hemimorphy vs. seed habit, with special reference to Selaginellales.

Unit-II

Sphenopsids - Equisetales (only a brief account)

Psilopsids

Characterization, classification and distinction between Eusporangiate,

Protoperisporangiate and Leptosporangiate

Structure, reproduction and Phylogenetic considerations of the following:

Eusporangiate - Ophioglossales

Protoperisporangiate - Osmundales

Leptosporangiate - Marsiliales, Salviniates and Filicales

Special reference has to be made about the following:

Cytology in phylogeny of ferns

Role of polyploidy in evolution of ferns

Economic importance of pteridophytes

Unit-III

Characteristic features, distribution and economic importance of gymnosperms

Classification of Gymnosperms

Comparative morphology, anatomy, reproductive structures and interrelationships of the following living orders

Cycadales

Ginkgoales

Taxales

7/13/19

7/13/19

ANS 4-3-15

11/11/19

14/11/18

15/11/18

11/13/19

Unit-IV

Coniferales: Characteristic features, families of modern conifers, their distinguishing features, evolution of female cone with reference to "transition conifers" as evolutionary line between cordaitales and coniferales

Comparative account of reproductive structures of Ephedrales, Gnetales, angiospermic features within the group

Evolutionary trend in sporophytic and gametophytic structures

Unit-V

Types and Nomenclature of fossils; Fossilization process and geological time-scale;

Principles and objectives of fossil study

Comparative morphology, anatomy, reproductive structure and affinities of the following fossil groups:

- Psilophytales
- Lepidodendroidales
- Cycadales
- Cordaitales
- Pteridophytales

Handwritten notes and signatures:

- 21/10/15
- 26/10/18
- 2/11/19
- 7.3.19

M.Sc. Botany
(Semester-I)

MBOTCC-4: Practical 1 (Based on MBOTCC 1, 2 & 3) (5 Credits)

Time: 3hrs

Marks: 70

1. Principles and use of different sterilization instruments like autoclave, oven, Laminar air flow system etc.
2. Preparation of media (Potato Dextrose Agar).
3. Isolation of fungi from soil.
4. Identification of fungal isolates.
5. Preparation of Nutrient Agar (NA) media.
6. Isolation of bacteria from water.
7. Characterization of bacterial isolate by Gram's staining.
8. Counting of fungal spore by haemocytometer.
9. Temporary slide preparation and study of common Algae.
10. Temporary slide preparation and study of common Fungi.
11. Study of vegetative habit, anatomy and reproductive morphology of common Bryophyta (*Marchantia*, *Anthoceros* etc.).
12. Study of vegetative habit, anatomy and reproductive morphology of common Pteridophyta (*Pellaea*, *Leopodium*, *Ophioglossum*, *Marsilea* etc.).
13. Study of vegetative habit, anatomy and reproductive morphology of common Gymnosperm (*Cycas*, *Pinus*, *Ginkgo*, *Gunnera* etc.).
14. Study of common fungal diseases- Rust of linseed, Blight of potato, Rust of wheat, Stem gall of coriander, Downy mildew, Powdery mildew etc.

John
19/04/16

Alina
7/3/19

Ana Ra

7/3/19

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7/3/19

M.Sc. Botany
(Semester-I)

MBOTCC-5: Biofertilizer Technology (5 Credits)

Time: 3hrs

Mark: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (one from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit-I

Introduction to biofertilizers - Structure and characteristic features of the following biofertilizer organisms: Bacteria: *Azospirillum*, *Azotobacter*, *Rhizobium* and *Frankia*; Cyanobacteria: *Anabaena*, *Nostoc*; Fungi: *Glomus* etc.

Unit-II

Nitrogenous Biofertilizers: Bacteria - Isolation and purification of *Azospirillum* and *Azotobacter*, mass multiplication of *Azospirillum* and *Azotobacter*, formulation of inoculum of *Azospirillum* and *Azotobacter*, application of inoculants of *Azospirillum* and *Azotobacter*. Isolation and purification of *Rhizobium*, mass multiplication and inoculum production of *Rhizobium*, Methods of application of *Rhizobium* inoculants.

Unit-III

Isolation and purification of Cyanobacteria- Mass multiplication of cyanobacterial bioinoculants - Trough or Tank method, Pit method, Field method; methods of application of cyanobacterial inoculum. *Anaba* - mass cultivation and application in rice fields.

Unit-IV

Mycorrhizae - Ecto and endomycorrhizae and their importance in agriculture. Isolation of AM fungi - Wet sieving method and sucrose gradient method. Mass production of AM inoculants and field applications. Isolation and Purification of phosphate solubilizers. Mass multiplication and field applications of phosphate solubilizer (*Pseudomonas striata*).

Unit-V

Biofertilization processes -Decomposition of organic matter and soil fertility and vermicomposting Biofertilizers: Storage, shelf life, quality control and marketing.

AMC
7/3/19

Jagan
24/6/18

14/6/18
2/3/19

27/3/19
AMC
7-3-19

M.Sc. Botany
(Semester-II)

MBOTCC-6: Taxonomy, Anatomy & Embryology (5 Credits)

Time: Two

Mark: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (one from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit-I

Classification: A historical account of Pre-Linnaean, Linnaean, Post-Linnaean and Pre-Darwinian Natural Systems and Post-Darwinian Phylogenetic Systems
Contemporary Systems: Arthur Cronquist, Armen Takhtajan, Robert F. Thorne and Rolf M.T. Dahlgren.

Unit II

Concept of taxa: Species, sub-species, variety and form; genus, family and higher categories
Concept of characters: 'Good' and 'Bad' characters, correlation of characters, character weighting
And variation
Botanical nomenclature: Binomial system and International Code of Botanical Nomenclature (ICBN)

Unit III

Post Mendelian approaches: An introduction to Genealogy, Experimental taxonomy, Cytotaxonomy, Biosystematics, Palynotaxonomy, Chemotaxonomy, Numerical Taxonomy/Taximetrics & Molecular Systematics

Unit IV

Differentiation, polarity, symmetry, factors affecting differentiation and morphogenesis
Meristems: Types
Organization of Shoot Apical Meristem (SAM)
Organization of Root Apical Meristem (RAM)
Differentiation of epidermis with special reference to stomata
Anomalous secondary growth
Node, Floral and Seed Anatomy - A phylogenetic consideration
Anatomy in relation to taxonomy

Unit V

Development of ovule, megasporogenesis and organization of female gametophytes (embryo sacs)
Pollen-Pistil interaction

Double fertilization and post fertilization changes leading to formation of seed, development of embryo, endosperm and seed coat

Polyembryony and Apomixis
Role of embryology in Taxonomy

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M.Sc. Botany
(Semester-II)

MBOTCC-7: Physiology & Biochemistry (3 Credits)

Time: 3hrs

Mark: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (two from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit-I

Genetic relations; Transport phenomena in plants; Transport of water and organic solutes, mechanism of xylem transport, mechanism of phloem transport, phloem loading and unloading

Unit-II

Energy transduction mechanism in plants: Photosynthesis: Difference between two pigment systems, Light reaction and dark reaction, water oxidizing complex, carbon fixation in C_3 and C_4 plants
 N_2 fixation: Non-symbiotic and Symbiotic

Unit-III

Plant growth and development: Growth hormones and growth regulators, mode of action of auxin, transport of auxin, physiological role of auxin
Gibberellin: Mode of action and physiological role
Cytokinin: Physiological role and mode of action

Unit-IV

Enzymology: Enzymes: structure and classification, cofactors, coenzymes, prosthetic groups, isoenzymes, allosteric enzymes, multicentric, mechanism of enzyme action, properties of enzymes

Unit-V

Biochemical Energetics: Glycolysis, TCA cycle, ETS, oxidative phosphorylation, photophosphorylation, Difference between oxidative phosphorylation and photophosphorylation

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M.Sc. Botany
(Semester-II)

MBOTCC-8: Plant tissue culture, ethnobotany, biodiversity & biometry (5 Credits)

Time: 3hrs

Marks: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (one from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

Cell and Tissue culture: Laboratory equipments; General techniques of aseptic manipulation; Composition of culture media and its preparation: Callus culture, suspension culture and single cell culture

Organ culture: *In vitro* culture of vegetative and reproductive parts Clonal propagation

Plant protoplasts: Isolation, culture methods and plant regeneration

Role of tissue culture in crop improvement

Unit II

Traditional/ethnobotanical knowledge base: Traditional knowledge base of Indian ethnic and local communities and their practices

Ethnopharmacology: Medical and paramedical use of plants in aboriginal or primitive societies in the world

Ethnocoology: Use of local biodiversity by aboriginal people for sustenance

Unit III

Biodiversity concept: Origin of the term, themes of biodiversity concept

Benefits of Biodiversity: Direct economic benefits to mankind, genetic resources, essential ecosystem services

Type of Biodiversity: Genetic, species and ecosystem diversity, distribution at global and national level. Assessment and inventory based on recommendation of IUCN, Biodiversity conventions and Biodiversity Act 2002

Patterns of loss of Biodiversity: Red lists, Red Data Book and Green Book

Red Data Categories: Extinct, endangered, vulnerable and threatened species.

Causes of biodiversity loss and extinction: Natural, genetic and ecological causes; human impacts including development pressure; Habitat loss, eutrophication and overexploitation of resources

Representations of loss biodiversity including future climate change

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Unit-IV

Conservation of Biodiversity (Phytodiversity)

Distinctions between preservation and conservation, Conservation potential index, Protocols for conservations, Traditional conservation practices

In situ and *ex situ* conservation

Patenting, Intellectual property right, Biosafety protocols

People's movements for biodiversity conservation

Unit-V

Biometry

Distribution and measurement of variation, Mean, Median, Mode, Standard deviation, standard error, coefficient of variability, test of significance- t test, F- test (analysis of variance); Measurement of correlation coefficient, Application of chi-square test for testing hypothesis

MBOTCC-9: Practical 2 (Based on MBOTCC 5, 6, 7, 8 & 9) (5 Credits)

Time: 5 hrs

Marks: 70

1. Preparation of culture media for growth of *Rhizobium*, *Azotobacter* and *Nostoc*.
2. Production microbial Biofertilizers: *Rhizobium*, *Azotobacter* and *Nostoc*.
3. Family description of some locally available Plants.
4. Anatomical secondary growth of some common plants (*Theophrasta*, *Bauhinaria*, *Nyctanthes*, *Aristolochia*, *Amorcanthus*).
5. Staining of Xylem and Phloem elements.
6. Study of stigma by squash method
7. Study of pollen germination
8. Mounting and study of embryo and endosperm.
9. Separation of chlorophyll pigment by paper chromatography.
10. Determination of water potential using plasmolytic method.
11. Estimation of protein by Lowry method.
12. Study of alpha-amylase in germinating seedlings.
13. Separation of amino acids by TLC.
14. Preparation of MS media for plant tissue culture.
15. Ex-plant culture and callus initiation.
16. Taxonomy and significance of some important medicinal plant.

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M.Sc. Botany
(Semester-II)

MBOTCC-10: Cell Biology & Cytogenetics (5 Credits)

Time: 3hrs

Mark: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (two from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer type questions are to be set (two from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

Cell theory and organization of the cell (Prokaryotic and Eukaryotic)

Ultrastructure chemical composition of the following:

Cell wall, Plasma membrane, Cytoplasm and cytoplasmic organelles (origin, ultrastructure & function: Plastids, Mitochondria, Endoplasmic reticulum, ribosomes, Golgi complex, Lysosomes, Peroxisomes and Centrosomes)

Unit-II

Nucleus: Nuclear membrane, nuclear pore, nucleolus and karyotymph

Cell division, Cell cycle and apoptosis, Control mechanism, cytokinesis and cell plate formation

Unit-III

Chromosome: Organization and special types

Mendelian genetics

Gene interaction

Sex determination

Unit-IV

Extracellular inheritance

Chromosomal aberration, polyploidy-types and role in speciation

Mutations- Molecular mechanism, induction by physical and chemical mutagens

Unit- V

Population Genetics

Microscopy: Phase contrast microscopy, Electron microscopy (SEM and TEM), Fluorescence microscopy

Microdensitometry

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21/11/19

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M.Sc. Botany
(Semester-III)

MBOTCC-11: Molecular Biology (5 Credits)

Time: 3hrs

Mark: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No. 1 will be compulsory comprising ten objective types questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer types questions (one from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer types questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

Organization of DNA: Nucleic acids as hereditary material; Structure and forms of DNA and RNA, double helix, supercoiling of DNA, Packaging of DNA in Prokaryotes and eukaryotes

Unit II

DNA replication: DNA replication models; Mechanism of DNA replication

DNA damage and repair mechanism: Different types of DNA damage and repair mechanisms; Diseases caused due to impairment in repair mechanism

Unit III

Transcription: Importance of DNA binding Proteins, RNA polymerase-types, structure and functions; Mechanism of Transcription in prokaryotes & Eukaryotes; Processing of RNA: m-RNA processing, 5' capping, 3' polyadenylation, splicing r-RNA & t-RNA processing
Genetic code: Cracking of code: characteristics

Unit IV

Translation: Machinery and mechanism in prokaryotes and eukaryotes; role of t-RNA & ribosome; Post translational modification of proteins such as phosphorylation, adenylation, acylation and glycosylation

Unit-V

Regulation of gene expression: Prokaryotes- Positive and negative control, inducible and repressible operons, lac operon, trp operon

Eukaryotes- Regulation at DNA, transcription, translation and post translational level

Antisense technology: Molecular mechanism of antisense molecules, application of antisense technologies.

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M.Sc. Botany
(Semester-III)

MBOTCC-11: Recombinant DNA Technology (3 Credits)

Time: 3hrs

Mark: 70

The question paper will consist of 7 questions divided into 3 sections.
Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).
Section B: Question No. 2 will also be compulsory and comprises five short answer type questions (one from each Unit) and students will have to attempt only four questions (4 x 3=12marks).
Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

rDNA technology: Techniques used in RDT: Polyacrylamide and agarose gel electrophoresis Blotting techniques: Southern, Northern and Western blotting Polymerase chain reaction and its applications, DNA sequencing: Various methods of DNA sequencing

Unit II

Cloning techniques and essential enzymes: Restriction enzymes-types and cleavage pattern; DNA ligase- types and ligation of DNA molecule *in vitro*
Cloning vectors: Plasmids (natural, pBR322, Ti plasmid vectors), phages, cosmid, artificial chromosome vector, Shuttle vectors, Expression vector

Unit III

Passenger DNA: Different strategies used for isolation/synthesis of gene; Organic chemical synthesis of gene; Construction of genomic and cDNA libraries
Construction of rDNA: Different strategies for construction of rDNA (Use of restriction enzymes, Linkers, Adaptors, Homopolymer tailing)

Unit IV

Selection strategies: Different methods for selection of clone (antibiotic resistant markers, colony hybridization, phage hybridization, immune screening)
Methods of DNA transfer in suitable host: electroporation, electofusion, microinjection, particle gun method, direct uptake of DNA (CaCl₂) method), liposomes as transforming vehicle
Expression of foreign gene

Unit V

Application of rDNA technology: In medicine, agriculture and environment protection
DNA finger printing: Methodology and its application
Intellectual property rights, biotech and patenting: IPR, sovereignty rights, CBD, biotech and patenting
Safety of recombinant DNA technology: Restriction and regulation for the release of GMOs; Social and ethical issue

Abhinav
7/3/19

Jagan
24/06/18

Abhinav
11/06/18
Anu
7-3-19
Anshu
21/3/19
Anshu
7-3-19

M.Sc. Botany
(Semester-III)

MBOTCC-13: Plant Ecology and Environmental Biology (3 Credits)

Time: Hrs

Marks: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No. 1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprises five short answer type questions (two from each Unit) and students will have to attempt only four questions (4 x 3=12marks).

Section C: Five long answer type questions are to be set (two from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit-I

Organism and population concept; Natality; Mortality; Density; Rate of population increase; r and k selection; Age and sex ratio; Aggregation

Interactions among populations: Commensalism, Amensalism, Mutualism, proto-cooperation and Symbiosis, predation and parasitism, competition

Intraspecific and interspecific

Plant adaptations

Unit-II

(i) Community Structure:

Qualitative character : Physiology, Phenology, Sociability, Vitality,
Raunkiaer's life forms

Quantitative Character : Frequency, Density, Abundance, Cover and basal area

Synthetic character : Presence and Constancy, Fidelity, Importance
value index

Methods of studying plant community: Quadrates, Transects, Biocot,

Plotless method

Classification of communities: Physiognomic classification, Floristic
classification, Dynamic system, Continuum concept

(ii) Community dynamics:

Concept of Succession, Nudation, Invasion, Competition and reaction, Stabilization and Climax, Xerome and Hydromere and their seral stage

Unit-III

Ecosystems: Abiotic and biotic components, Ecological pyramids, Structural organization of grassland, forest and aquatic ecosystems

Ecosystems energetic: Laws of thermodynamics, Productivity, energy food chain and ecosystem
budget, Biogeochemical cycles

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Unit-IV

Environmental Pollution: Air, Water, Soil, waste radioactive and noise pollution; Global warming; green house effect; O₃ depletion; Climate change

Unit-V

Environmental Awareness: Man and Biosphere (MAB); International Union for Conservation of Nature and Natural Resources (IUCN); United Nations Environment Programme (UNEP); World Environmental Day; Wildlife Preservation Act (1972); Indian Forest Conservation Act (1989)

MBOTCC-14: Practical 3 (Based on MBOTCC 5, 6, 7, 8 & 9) (5 Credits)

Time: 5 hrs

Marks: 70

1. Principle and use of different modern instruments used in Botany.
2. Cytological techniques: Preparation of cytological stains, fixation of sample etc.
3. Mitotic slide preparation of common plant.
4. Meiotic slide preparation of common plant.
5. Karyotype analysis.
6. Calculation of chiasma frequency.
7. Isolation of antibiotic resistant mutant by auxanography technique.
8. Isolation of genomic DNA from cauliflower.
9. Spectrophotometric estimation of DNA by diphenyl method.
10. Separation of DNA by agarose gel electrophoresis.
11. Demonstration of amplification of DNA using PCR.
12. Study of local vegetation by quadrat method.
13. Study of ecological adaptations (Morphological and anatomical) in plants.
14. Water analysis for pollution studies (Dissolved Oxygen, BOD, Dissolved Carbon dioxide, Chloride, Alkalinity etc.)

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Abhi
14/6/18

M. S. S.
7/3/19

Abhinav
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Sharma
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M.Sc. Botany
(Semester-IV)

Option I

It consist of Core Elective papers

MBOTEC-1: Cytogenetics and Crop improvement (5 Credits)

MBOTEC-2: Practical based on MBOTEC-1 (5 Credits)

MBOTEC-1: Applied Microbiology and Plant Pathology (5 Credits)

MBOTEC-2: Practical based on MBOTEC-1 (5 Credits)

Or any other Elective Core papers decided by BOCs and duly approved by competent bodies of the University.




Option II

MBOTEC-1: Any theory paper of Core Elective

MBOTEC-2: Project dissertation and Viva-voce

Option III

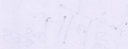
MBOTEC-1 and MBOTEC-2: Combined together and act as Project dissertation and Viva-voce carrying 200 marks (10 Credits).









M.Sc. Botany
(Semester-IV)

MBOTEC-1: Cytogenetics and Crop Improvement (5 Credits)

Time: 3hrs

Marks: 70

The question paper will consist of 7 questions divided into 3 sections.

Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).

Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (one from each Unit) and students will have to attempt only four questions (4 x 5=20marks).

Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

Haploidy- Origin, production, cytological behaviour and genetic uses
Aneuploidy and polyploidy-Origin, classification, production, cytological behaviour and genetic uses, Role of polyploidy in evolution and speciation; Evolution of karyotypes
Chromosome banding pattern: Techniques, functional differentiation of chromosome segments, their chemical nature, significance and effect

Unit II

Mutations: Spontaneous and induced; physical and chemical mutagens- classification, mode of action; molecular basis of gene mutations; site directed mutagenesis; role of mutations in crop improvement
Cytoplasmic inheritance and maternal effect
Transposons: Structure and types of transposons (Prokaryotic and Eukaryotic); Mechanism of transposition (replicative and non-replicative); Retrotransposon; Application of transposon

Unit-III

Role Cytogenetics in crop improvement.
Epigenetics: Introduction; histone code; base modification; paramutations in maize; Epigenetics and Lamendkiser; Epigenome and epigenomics.
Genetic diseases of human, Eugenics

Unit IV

Role Cytogenetics in crop improvement.
Genetic basis of evolution and speciation
Incompatibility
Centers of diversity of cultivated plants

Unit V

A brief account of classical methods of plant breeding
Modern techniques of plant breeding: Hybrids or cybrids, protoplast fusion and somatic hybridization (paramassal hybridization techniques) and a brief idea of Terminator gene technology
Heterosis and heterosis breeding
Breeding for disease and drought resistance

MBOTEC-2: Practical based on MBOTEC-1 (Cytogenetics and Crop Improvement) (5 Credits)

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M.Sc. Botany
(Semester-IV)

MBOTEC-1: Applied Microbiology and Plant Pathology (5 Credits)

Time: 3hrs

Marks: 70

The question paper will consist of 7 questions divided into 3 sections.
Section A: Question No.1 will be compulsory comprising ten objective type questions (two from each Unit) each carrying two marks (10x2=20 marks).
Section B: Question No. 2 will also be compulsory and comprise five short answer type questions (one from each Unit) and students will have to attempt only four questions (4 x 3=12marks).
Section C: Five long answer type questions are to be set (one from each Unit) of which any three questions are to be answered (3 x 10=30 marks).

Unit I

Fermentation technology: Scope and prospects
Microbial Metabolites: Primary and secondary metabolites; Production of organic acids (citric acid), amino acid (Glutamic acid) and Vitamin (Vitamin B₁₂)
Production of antibiotics (Streptomycin)
Enzymes production and their commercial applications: Amylases, Pectinase, Rennin

Unit II

Biochemical activity of microorganisms in milk
Fermented dairy products: yogurt and cheese
Microorganisms as food: Single cell proteins (SCP), Edible mushroom (Button and Oyster), Fermented beverages; Production of wine and beer

Unit III

Treatment of solid waste: Composting & Land filling
Wastewater treatment methods: Oxidation pond, Trickling filter, Activated sludge methods; Anaerobic treatment of wastewater
Waste water treatment by plants
Bioremediation and biogas production

Unit IV

History, classification and importance of plant pathology
Chemical and biological management of plant disease control
Integrated pest management (IPM)
Biopesticides: Bacterial, viral and fungal biopesticides and their uses and applications

Unit V

Selected plant diseases with special reference to symptoms, etiology and disease management
Cereals: Blast of rice, Karnal blast of wheat
Fruits & Vegetables: Downy mildew of cucurbits, Bacterial spot of tomato, Downy mildew of grapes
Pulses: Wilt of arhar, powdery mildew of pea
Oil seeds: Rust of linseed
Fiber crop: Wilt of cotton
Spices & condiments: Stem galls of coriander, leaf spot of turmeric, rust of onion & leaf curl of chilli
Sugarcane: Whip smut of sugarcane, grassy shoot disease of sugarcane,
Tea, Coffee & Tobacco: Blister blight of tea, leaf rust of coffee & leaf blight of tobacco

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MBOTEC-2: Practical based on MBOTEC-1 (Applied Microbiology and Plant Pathology) (5 Credits)

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AECC-1

A- Environmental Sustainability (3 Credit)

B- Swachha Bharat Abhiyan Activities (2 Credits)

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Each credit requires 10 hours of teaching- learning for theory and 20 hours for practical assignment field work.

A-Unit -1 Environmental ethics & ecosystem: Concept of sustainable development with reference to human values in western and Indian perspective, sustainable development & conservation of natural resources (Nature, factors, structure, development and people participation) development, environment- rural and urban, concept of Ecosystem.

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A-Unit -2 Development and its effect on environment: Environment Pollution - water, air, noise etc. due to Urbanisation, Industrial civilization, Concept of Global Warming, Climatic Change, Green House Effect, Acid rain, Ozone layer depletion. Menace of encroachment of exotic plants particularly parthenium and trees with special reference to impact on habit & habitat on indigenous flora & fauna.

A-Unit -3 Concept of Bio-diversity and its conservation: Environmental Degradation and conservation. Govt. Policies, Social effects and role of social reforms in this direction. Role of science in conservation of environment concept of Three 'R' (reduce, reuse, recycle). Need of environmental education and awareness programme and ecological economics.

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B-Unit -4 Swachha Bharat Abhiyan: The concept of Swachhata as personal, Gandhian approach towards social and environmental moral values & concept of swachhata and its relation to moral upgradation of society and freedom struggle. Awareness Programme related to Swachhata. Role of 'Swachhagrahis' in Swachha Bharat Abhiyan.

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Sanitation and hygiene, why sanitation is needed, sanitation and human rights, plantation, value of nature, concept of community participation and role of state agencies. Case study of Sanitation, effects of cleanliness, diseases - infectious and vector - born Idea of spread of diseases through body and other biological fluids and excreta.

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B-Unit-5 Assignment/Practical/field work based on unit-4

or

Alternative to unit-4 and unit-5 a student can also enrol for Swachha Bharat Internship programme of MIRD.

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Human Values and Professional Ethics (3 Credits)**Gender Sensitisation (2 Credits)**

(One credit requires ten hours of theory and twenty hours of practical/assignment/field work)

Unit - 1: Variety of Moral Issues, Principles of Ethics and Morality:-

Understanding the Harmony in the Society (society being an extension of family), Integrity, Work Ethic, Courage, Empathy, Self Confidence, Professional Ideas and Virtues, Ethics as a Subset of Morality, Ethics and Organizations, Duties and Rights of employees and employers.

Unit - 2: Holistic approach to corporate ethics:-

Vedantic Ethics - Tagore, Vivekanand, Gandhi and Ambedkar on Ethics, Ethics in Finance, Business and Environment, Professional Rights, Intellectual Property Rights, Corporate Responsibility, Social Audit and Ethical Investing, Computer and Ethics.

Unit - 3: Professional Ethics:-

Augmenting Universal Human Order, Characteristics of people-friendly and eco-friendly production, Strategy for Transition from the Present State to Universal Human Order, At the Level of Individual- as Socially and Ecologically Responsible Technologists and Managers, At the Level of Society- as Mutually Enriching Institutions and Organizations, Case studies of typical holistic technologies and management patterns.

Unit - 4: Gender - An Overview:-

Gender: Definition, nature and evolution, culture, tradition, historicity; Gender spectrum: biological, sociological, psychological conditioning; Gender based division of labour - domestic work and use value.

Unit - 5: Gender - Contemporary perspectives

Gender justice and human rights: international perspectives, Gender : constitutional and legal perspectives, media & gender, Gender: emerging issues and challenges.

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Generic Elective (GE) course	
Course title: Graphic Designing	
Course code: GE-1	Credit 5
(There shall be 5 units each consisting of one credit)	
Course offered in: Semester- IV	
Course content:	
Unit	Topics
I	HTML5 and CSS3: General Introduction to Internet and WWW, Text tags, Graphics, Video and Sound Tags, Link and Anchor Tags, Table Tags, Form Tags, Miscellaneous tags (Layers, image maps etc), Events, Web sockets, CSS3, API, Example Applications, etc.
II	PHP Programming and MySQL: Programming constructs, Variable/Constants, GET & POST, Files, User-defined Functions, Built-in Functions, Cookies, Sessions, Error Handling, MySQL tools and its integration, AJAX, XML, Object Orientation, Form, Facebook and Paypal Integration, Example Applications.
III	Java script and jQuery: Java script – Basic data types, control structures, functions, arrays and objects, events, html DOM, cookies, error handling, multimedia, animation, Example Applications. jQuery – Basics, Selectors, Attributes, DOM, Events, AJAX, CSS, UI, Plugins.
IV	Content Management and SEO: WordPress – Installation, Settings, Categories, Posts, Media, Pages, Tags, Links, Comments, Plugins, theme. SEO – Introduction, search rules, methods, keyword & title optimization.
V	Assignment / Field Work based and Unit I, II, III and IV.

Note: Students who enrolled for WEB DESIGNING as ABC in Semester II will not be allowed to take Graphic Design as a GE course in Semester IV

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Shikha
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Shweta
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Hema
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Shruti
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Ch. Anshu
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Generic Elective (GE) course	
Course title: Inclusive Policies	
Course code: GE-1	Credit 5 (There shall be 5 units each consisting of one credit)
Course offered in: Semester- IV	
Course content:	
Unit	Topics
I	Concept of Inclusive Policy: a. Meaning and Nature of inclusive policy b. Exclusion and Inclusion Controversy, caste based Exclusion
II	Right of Individual and their Redressal a. State Policies and the Rights of Individual b. Obstacles in the fulfillment of Individual Rights, Poverty, Illitancy, Under Development, Government Policies
III	Sources of Inclusive Policies a. Constitutional Provisions and Inclusive Policies b. Ideas of Amartya Sen.
IV	Inclusive Policies and Human Rights a. Social, Economic, Political and Legal Structure of the Country. b. Bureaucratic corruption, police Atrocities and criminal judicial process.
V	Assignment / Field Work based and Unit I, II, III and IV.

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Generic Elective (GE) course	
Course title: Human Rights	
Course code: GE-1	Credits: 5
(There shall be 5 units each consisting of one credit)	
Course offered in: Semester-IV	
Course content:	
Unit	Topics
I	Conceptual Aspects of Human Rights a. Meaning and Concept of Human Rights b. Human Rights, Natural Rights, Civil Rights, Political Rights and Legal Rights.
II	Evolution of the Concept of Human Rights a. Magna Carta, The united state declaration of independence: The French Declaration of the Rights of Man and the Citizen: United state Bill of Rights: Geneva Convention of 1864: Universal declaration of Human Rights, 1948. b. International Bill of Rights, Significance of Universal Declaration of Human Rights: International Covenant on Civil and political Rights, International Covenant on Economic, Social and cultural Rights.
III	Diversity, Multiculturalism and Human Rights a. Value of Diversity: Collective Cultural Rights and the Idea of Universal Human Rights: Multiculturalism and Minority Rights: protection and promotion of Human Rights in Multicultural Societies. b. Beyond Universal Human Rights: Universalism of human Rights: Nation-State and the Right to national Self-Determination: state Sovereignty and the Politics of Universal Human rights.
IV	Theoretical aspects of Human rights. a. Theories of Human rights-Liberal Perspective-Locke, Rousseau, J.S. Mill, Marxian Perspective-Marx, Gramsci b. Feminist Perspective of Human Rights.
V	Assignment / Field Work based on Unit I, II, III and IV.

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Generic Elective (GE) Course

Credit - 5

Family Management

(One credit requires ten hours of theory and twenty hours of practical/assignment/field work)

Unit 1 : Concept of typical Indian family:

Indian society and Indian family, importance of relationship within family, similarities and dissimilarities in between Indian and western family, definite role of family members.

Unit 2 : Food production and cleanliness:

Cooking - art or science, personal grooming, hygiene & uniform, Do's and don'ts while working in the kitchen, Domestic Food Production, nutrition- Balanced Diet and its function, effect of heat on fat, carbohydrates, proteins, vitamins and minerals. Cholesterol and trans fats and related diseases. Disease producing microbes.

Unit 3 : House keeping:

Equipment handling, care & cleaning & identification of cleaning equipments; Care, cleaning & polishing of surfaces - metals, glass, floor, carpets; Paints, daily cleaning of rooms and bath rooms.

Unit 4 : Safety & health care:

Psychology - child care and care of the elderly. Basic human anatomy and physiology (skeleton, respiratory, circulatory, excretory, nervous & reproductive systems). First aid care in different accidents (hemorrhage, aphylxia, shock & unconsciousness, cardiac arrest, burns, insect bite, snake bite, poisoning, injury etc.). Nursing, first aid box, importance of group practice of yoga and exercise.

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Unit 5 : Importance of communication and care in family:

Leadership in family, communication gap between generations, significance of soft-skill, Indian laws related to family problems, understanding and misunderstanding within the family members and among close relatives, in-laws etc. Necessity of small investments for family members.

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Ability Enhancement Course (AEC) / Skill Enhancement Course (SEC)	
Course title: Computers & ICT	
Course code: AEC-1	Credit: 5
Or SEC-1	(There shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course content:	
Unit	Topics
I	Basis of "Computer System": What is a computer? Computer System components - Hardware and Software. Introduction to the terms - Motherboard, SMPS, Processor, RAM, ROM, Ports and Cards. Broad overview of different makes of these components, their availability in the market and their prices.
II	Basis of "Operating Systems": Introduction to Unix/Linux Operating System. Introduction to Windows Operating System. Basic operations on Unix/Linux and Windows Operating Systems.
III	Information Management: Document Processing and e-Documentation using Word processor like open office. Statistical and Graphical data analysis using spread sheet and statistical packages. Data / Information communication and presentation using PowerPoint.
IV	NSD (Special Skill Development) Detailed study on any one of the following three using Spoken Tutorial: a. Latex b. Accounting software c. Spread sheet using Spoken tutorial d. Matlab/octave
V	Networking Basic:- Network topologies, LAN, MAN, WAN, TCP/IP, Knowledge of Networking hardware, Server/Client, Interface, Internet Connectivity
VI	Assignment / Field Work based and Unit I, II, III and IV.

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Web Designing	
Course code: AEC-1/SEC-1	Credits 5 (There shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: This paper is designed to enable students to learn basic components required to design and manage a website. The emphasis is given on hands-on training so as to enable students to design their own website.	
Course objectives: To expose students to the technology of web site design and to introduce various tools and languages required for dynamic and creative design of state-of-the-art web sites.	
Course content:	
Unit	Topics
I	HTML5 and CSS3: General Introduction to Internet and WWW, Text tags, Graphics, Video and Sound Tags, Link and Anchor Tags, Table Tags, Form Tags, Miscellaneous tags (Iframes, image maps etc), Events, Web sockets, CSS3, APL, Example Applications, etc.
II	PHP Programming and MySQL: Programming constructs, Variable/Constants, GET & POST, Files, User defined Functions, Built-in Functions, Cookies, Sessions, Error Handling, MySQL tools and its integration, AJAX, XML, Object Orientation, Form, Facebook and Paypal integration, Example Applications.
III	JavaScript and jQuery: JavaScript – Basic data types, control structures, functions, arrays and objects, events, local DOM, cookies, error handling, multimedia, animation, Example Applications. jQuery – Basics, Selectors, Attributes, DOM, Events, AJAX, CSS, UI, Plugins.
IV	Content Management and SEO: WordPress – Installation, Settings, Categories, Posts, Media, Pages, Tags, Links, Comments, Plugins, themes. SEO – Introduction, thumb rules, methods, keyword & title optimization.
V	Lab/Assignment/hand-on training based on Unit I, II, III and IV
Learning outcomes: On completion of this course, the students would: 1. Have a strong foundation to undertake specialized courses in the field of web designing. 2. Develop their own website and manage it.	
The laboratory work will consist of 9-13 Experiments:	
<ol style="list-style-type: none"> 1. Practicing basic HTML tags, text tags text styles, paragraph styles, headings, lists, Forms, Tables, Link and Anchor Tags etc. 2. Including graphics, video and sound in web pages, Layers & Image Maps 3. Creating animated GIFs, simple flash animations 4. Cascading Style sheets 5. Creating and browsing XML database 6. Installing web server, setting PHP, Creating client and back end script with GET & POST methods (connecting HTML). 7. MySQL commands/tools and this integration with PHP 8. Exercises covering basic introduction to JavaScript and jQuery 9. Development of a web site using Word Press involving a variety of tools/practical above. 	

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)

Course title : Derivatives and Risk Management		
Course code: AEC/INSEC-1		Learning Hours- 58
Course offered in: Semester : I		
<p>Course description: Every investment activity entails an element of risk, even bank fixed deposits are considered to be free from risk are subject to risk like interest rate, inflation and default risk. Therefore, managing risk is one of the Prime Concern for every investor. At the same time, Speculators feel the requirement of such a financial instrument that can help in having gain at a low cost. The answer to all these is understanding and practicing DERIVATIVES.</p> <p>The derivatives are most modern financial instruments in hedging risk. The individuals and firms who wish to avoid or reduce risk can deal with the others who are willing to accept the risk for a price. A common place/where such transactions take place is called the 'derivatives market'</p>		
<p>Course objectives:</p> <ol style="list-style-type: none"> To develop skills among the students who are planning to pursue their career in Finance and Banking Sector. To develop knowledge among the students to enable them to take decision under the most difficult situation led by uncertainties in the competitive business world. 		
Course contents:		
Sl. No.	Topics	No. of Periods
1	<p>Introduction:- Risk as an Investment Strategy- managing risk in the corporate world- credit Risk Vs Market Risk- Default Risk- Foreign Exchange Risk- Interest rate Risk- Systematic Risk and Non-Systematic Risk- Hedging Scheme- Delta- Theta- Gamma- Vega- Rho</p>	10
2	<p>Risk and Derivatives based Hedging Strategies Risk Associated with Investment</p> <ul style="list-style-type: none"> Systematic Risk Non Systematic Risk <p>Hedging- Risk Management</p> <ul style="list-style-type: none"> Strategy of Diversification of portfolio Strategy of Active Portfolio Management <p>Hedging/Risk Management Through Derivatives:</p> <ul style="list-style-type: none"> Short Hedge Long Hedge 	10
3	<p>Financial Markets and Derivatives: Financial Markets:</p> <ul style="list-style-type: none"> Money Market Capital Market <p>Order-Driven Market and Types of Orders Traders in Derivatives Market-</p> <ul style="list-style-type: none"> Hedger Speculator Arbitrageur 	10
4	<p>Derivatives & Bird's eye view Introduction Different derivative transactions- option contract Pay offs from option contract Futures transaction-</p> <ul style="list-style-type: none"> Features of Futures transaction 	10

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	<ul style="list-style-type: none"> Margin Deposit-initial margin and mark-to-market margin <p>Forward transaction-</p> <ul style="list-style-type: none"> Features of forward transaction Difference of between options, futures and forward contracts 	
3	<p>SWAP</p> <ul style="list-style-type: none"> Foreign Exchange Swap Interest Rate Swap (Plain Vanilla SWAP) Cross Currency SWAP (Total Loss SWAP) Derivatives Trading at NSE-Commodity Derivatives Trading in India <p>CASE STUDIES</p>	10

Learning outcomes:

By the end of the course students should be able to understand the mechanism of managing and handling risk which explicitly addresses the uncertainties of the competitive corporate world of 21st century.

A Few Topics for Case Studies:

Risk management as Decision-making Process in the Banking Sector-Risk and Uncertain business world-managing risk under the conditions of uncertainty- investment strategy and Risk- Impact of Systematic risk in project-management-importance of the knowledge of various types of risk associated with the Investment-Hedging Strategy for Portfolio-delta Hedging-static delta Hedging and Dynamic delta Hedging-fore, gamma, Vega and Rho Hedging.

Assignments:

Each student has to prepare a dissertation on any topic related to any of the Unit. The dissertation should include the following heads:

1. Preface
2. Definition
3. Review of Literature
4. Methodology
5. Observations/Case Study
6. Relevance
7. Decisions
8. Conclusions
9. Reference

List Of Books:

1. Derivatives and Risk Management by Bharosh Kumar Khatri-Macmillan Publishers India Limited, Delhi.
2. The Essentials of Risk Management by Michel Crosby, Dan Galai ISBN: 007118510/978-0071185113
3. Credit Risk management for Indian Banks by K. Vaidyanathan-Sage Publishing.
4. Risk Management by Indian Institute of Banking
5. Risk Management and Financial Institutions by John C. Hull-Published by John Wiley and Sons, New Jersey.
6. Risk Management by Paul Hopkin-Published on Amazon.com
7. Fundamentals of Risk Management: Understanding, Evaluating and Implementing effective Risk Management by Paul Hopkin-Published on Amazon.com.U.K., Publisher Kogan Page.
8. Essentials of Risk Management by Michel Crosby-Publisher MCCraw Hill Education.
9. Essentials of Financial Risk Management by Horcher-Publisher Wiley-Bartlett-Publisher Rortledge.

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title: Solid Waste Management	
Course code: AEC-ENEC-1	Credits (there shall be 3 units each consisting of one credit)
Course offered in: Semester-II	
Course description: The course would cover-general introduction including definition of solid wastes-municipal waste, biomedical waste, hazardous waste, e-waste, legal issues and requirements for solid waste management; sampling and characterization of solid waste.	
Course objectives:	
1. Understanding of problems of municipal waste, biomedical waste, hazardous waste, e-waste, industrial waste etc.	
2. Become aware of Environment and health impacts of solid waste mismanagement	
Course content:	
Unit	Topics
I	General introduction including definitions of solid waste including municipal, hospital and industrial solid waste; E-wastes, legal issues and requirements for solid waste management; Solid waste management rules, 2016.
II	Health and environmental issues related to solid waste management
III	Methods of waste collection, collection techniques, waste container compatibility, waste storage requirements, transportation of solid wastes
IV	Treatment and disposal techniques for solid wastes-composting: Composting, Vermicomposting, Autoclaving, Microwaving, Incineration, Non-incineration thermal techniques, Landfilling
V	Source Reduction, Product Recovery and Recycling Recovery of Biological Conversion Products Composts and Biogas Incineration and Energy Recovery Integrated Waste Management (IWM)
Learning outcomes:	
After completion of the course students should be able to characterize solid waste; analysis of hazardous waste constituents; understand health and environmental issues related to solid waste management; apply steps in solid waste management-waste reduction at source, collection techniques, materials and resource recovery/recycling, transport, optimization of solid waste transport, treatment and disposal techniques	
Practical:	
1. Assessment about disposal of different wastes in waste-bin (Concept of disposal of Biodegradable, Non-biodegradable and bio hazardous wastes in different coloured bins)	
2. Method of composting	
3. Method of vermicomposting	
4. Autoclaving	
5. Bio gas production	

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Assignments:

1. Global and Indian issues related to Solid wastes
2. Health issues related to solid waste management
3. Environmental issues related to solid waste management
4. Disposal methods for biodegradable wastes
5. Disposal methods for Non-biodegradable wastes
6. Disposal methods for Recyclable wastes
7. Biomedical wastes and their disposal methods
8. E-wastes and their disposal
9. Landfilling method of solid waste disposal
10. Vermicomposting method of solid waste disposal etc.

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Mushroom Technology	
Course code: AEC-INEC-1	Credit 3 (There shall be 3 units each consisting of one credit)
Course offered in: Semester- II	
Course description: The course would cover-general introduction about fungi including a general life cycle of Mushroom, Edible and Poisonous mushrooms, Different aspects of mushroom cultivation in relation to environment, Nutritional value of mushrooms, Economic importance and health benefits of mushroom, Identification of mushroom by spore print method, Production method of edible mushrooms - Button and oyster mushrooms, Preservation method for mushroom fruiting body- drying, Diseases of mushroom caused by bacteria, fungi and viruses and its control.	
Course objectives:	
<ol style="list-style-type: none"> 1. Cultivation methods for edible varieties of mushrooms. 2. Preservation method for mushroom fruiting body as well as its spore and mycelium. 3. Awareness of health benefits of mushroom consumption. 	
Course content:	
Unit	Topics
I	General introduction about fungi including a general life cycle of Mushroom; Edible and Poisonous mushrooms; Different aspects of mushroom cultivation in relation to environment; Economic importance and health benefits of mushrooms.
II	Production method of some edible mushroom - Button mushroom (<i>Agaricus bisporus</i>) oyster mushroom (<i>Pleurotus ostreatus</i>).
III	Preservation method for mushroom fruiting body-drying; Diseases on mushroom caused by bacteria, fungi and viruses and its control.
IV	Isolation and culture of spores, culture media preparation; Production of mother culture, mother spores, commercial spores.
V	Different methods of maintenance of mushroom culture and its strain preservation.
Learning outcomes:	
After completion of the course students should be able to understand the cultivation methods for the production of mushrooms viz. Button, Oyster, diseases on mushroom and its remedial measures; preservation method for mushroom fruiting body and its spore as well as mycelium; social, economical, environmental and health benefits of mushroom consumption.	
Practical:	
<ol style="list-style-type: none"> 1. Production of mother culture by spore culture. 2. Cultivation of Oyster mushroom. 3. Spore print and microscopic examination of mushroom spore and mycelium. 4. Preservation of mushroom by drying. 	
Assignments:	
<ol style="list-style-type: none"> 1. Edible mushrooms cultivated in India 2. Poisonous mushrooms. 3. Cultivation method for Button and Oyster mushrooms. 4. Nutritional and other health benefits of mushrooms. 5. Mushroom spore production methods etc. 	

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)

Course title: Biofertilizer Technology

Course code: AEC-1/SEC-1

Credits: 3

(There shall be 3 units each consisting of one credit)

Course offered in: Semester- II

Course description: The course would cover-general introduction about different types of biofertilizers, Edible and Different aspects of biofertilizers production in relation to environment protection, soil enrichment and other benefits. Production methods of different types of biofertilizers.

Course objectives:

1. Structure and characteristic features of different microorganisms used as biofertilizers.
2. Cultivation methods for different types of biofertilizers.
3. Awareness of environmental and agricultural benefits of biofertilizers.

Course content:

Unit	Topics
I	Introduction to Biofertilizers-Structure and characteristic features of the following biofertilizer organisms: Bacteria, Azotobacter, Rhizobium, Cyanobacteria, Nostoc.
II	Nitrogenous Biofertilizers: Bacteria - Isolation and purification of Azotobacter, mass multiplication Azotobacter, formulation of inoculum of Azotobacter. Methods of application of Azotobacter inoculum. Isolation and purification of Rhizobium, mass multiplication and inoculum production of Rhizobium, Methods of application of Rhizobium inoculants.
III	Isolation and purification of Cyanobacteria- Mass multiplication of cyanobacterial inoculants - Trough or Tank method, Pit method, Field method; Methods of application of cyanobacterial inoculum. Azolla - mass cultivation and application in rice fields.
IV	Biofertilization processes-Decomposition of organic matter and soil fertility and vermicomposting.
V	Biofertilizers - Storage, shelf life, quality control and marketing.

Learning outcomes:

After completion of the course students should be able to understand the cultivation methods for the production of different types of biofertilizers and their benefits.

Practical:

1. Isolation and identification different types of microorganisms used as Bio-fertilizers.
2. Mass Cultivation of Azotobacter.
3. Mass cultivation of Nostoc.

Assignments:

1. Biofertilizers cultivated in India
2. Environmental benefits of biofertilizers.
3. Agricultural benefits of biofertilizers.
4. Azotobacter as biofertilizer
5. Rhizobium as biofertilizer
6. Cyanobacteria as biofertilizer
7. Azolla as biofertilizer etc.

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Environmental Law and Policy	
Course code: AEC-USEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: Law and policy plays a major role in the conservation and management of natural resources as well as pollution control. This course intends to introduce the students to the vast field of Environmental Law and Policy. The course would be divided into three broad areas. The first part would cover the basic concepts and principles of Environmental Law. This would include judicial precedents, which now forms an essential part of environmental jurisprudence. The second part would be divided into specific introductory modules on forests and wild life including bio-diversity related laws; Air and Water related laws including mega projects and marine laws; and laws relating to hazardous substances. The third part would discuss the role of judiciary including the National Green Tribunal in protecting the environment.	
Course objectives:	
<ol style="list-style-type: none"> To provide an overview of the law and policies relating to environment both at the national and international level. To critically analyse the implementation of these laws and the role of adjudicatory bodies in the field of environment. 	
Course content:	
Unit	Topics
I	Introduction: Environment: meaning and components Environment in Development debates, trigger events, business and environmental law, a brief introduction to SDGs. Introduction to environmental laws in India; Constitutional provisions, an overview of the laws General principles in Environmental law: Precautionary principle; Polluter pays principle; Sustainable development; Public trust doctrine.
II	Forest, Wildlife and Biodiversity related laws: Evolution and Jurisprudence of Forest and Wildlife laws, Colonial forest policies; Forest policies after independence. Statutory framework on Forests, Wildlife and Biodiversity: FFA, 1927, WLPA, 1972, FCA, 1980, Biological Diversity Act, 2002, Forest Rights Act, 2006. Strangles for conservation-Dolphin, Tiger, Flapjacks, Rhino
III	Air and Water Laws National Water Policy Laws relating to prevention of pollution, access and management of water and institutional mechanisms: Water Act, 1974; Water Cons Act, 1977, EPA, 1986. Pollution Control Boards Ground water and law Legal framework on Air pollution: Air Act, 1981; EPA, 1986 as amended to date including rules and notifications issued under it.
IV	Environment protection laws and large Projects Legal framework on environment protection-Environment Protection Act as the framework legislation-strength and weaknesses; EIA. Marine laws of India; Coastal zone regulations, Wetland conservation.
V	Judicial remedies and the role of National Green Tribunal Role of judiciary in environmental protection; Infrastructure projects and the Indian Judiciary

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Learning outcomes:

On completion of this course, the students would:

1. Have a strong foundation to undertake specialized courses in the field of environmental laws and policy
2. Develop an inter-disciplinary approach to the issues relating to environment.

Assignments:

1. Environmental laws in India
2. Evolution and Jurisprudence of Forest and Wildlife laws
3. Legal framework on Air pollution
4. Biological Diversity law
5. Role of judiciary in environmental protection
6. Air Laws
7. Water Laws
8. Wetland conservation etc.

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Tourism And Hospitality Management	
Course code: AEC-INEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: The course is designed to enable students to learn various components of tourism and hospitality industry like tour arrangements, transportation, hospitality and travel circuits. This course will enable students to earn required skills needed for self-employment and employment for others.	
Course objectives: The aim of the course is to provide elementary knowledge of tourism industry including transportation, hotel, destination and future scopes.	
Course content:	
Unit	Topics
I	Introduction: Overview of tourism industry: Concept of tourism, Why it is important to study tourism? Scope of tourism and its economic importance, Impact of Tourism.
II	Elements of Tourism: Attraction, accessibility, accommodation, tourism product, characteristics of tourism products, types of products and tourism. Hotel Industry, Hotel Chains, Departments of Hotel, Tourist Guide and Escort, Public Relation.
III	Tour operation: Travel Agency and Tour Operator, Travel related documents, Passport, Visa, currency regulations, custom, health regulations, baggage regulations etc.
IV	Transportation: Role of transportation industry in tourism, Indian railways and its special trains (Palace on Wheels, Royal orient), airlines operating in India and international. Kind of Taxi and bus/coach services available.
V	Travel circuits: Some popular and important tourism circuits in India (golden triangle, desert circuit, Bandha circuit, sun and sand, back waters etc) and international circuits.
Learning outcomes: On completion of this course, the students would:	
<ol style="list-style-type: none"> 1. Have a strong foundation to undertake special/real courses in the field of tourism and hospitality Management 2. Gain training for self-employment and generate employment for others. 	
Assessments: Assessment will be based on Unit I, II, III, IV and V	

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Ability Enhancement Course (AEC) or Skill Enhancement Course (SEC)	
Course title : Life and Communication Skill Development	
Course code: AEC-ISEC-1	Credit 5 (there shall be 5 units each consisting of one credit)
Course offered in: Semester- II	
Course description: Acquisition of life skills will empower students to cope with the transitive interactions in personal and professional lives while in an age of communication the curriculum will equip students to develop expertise in the utilities of ICT in the transmission of knowledge.	
Course objectives:	
1. To develop communication skill of students.	
2. To develop writing skill of students.	
3. To develop expertise in the utilities of ICT in the transmission of knowledge.	
Course content:	
Unit	Topics
I	Life Skills: Critical thinking, Aristotle's Law of Logic, Problem solving, Creative thinking
II	Inter personal Skills: Childhood Ethics, Coping with emotions and stress, Trustworthiness and empathy, Negotiating difference of opinions
III	Communication skills: What is Communication?, Listening Skills, Speaking Skills, Reading Skills, Writing Skills, Group Discussion and Personal Interview, Barriers to Communication
IV	Specialized Writing Skills: Official letters, Business letters, Personal letters, Writing agendas, Minutes, Reports, Writing CVs, Resume, Statement of Purpose. Sending applications through mail with attachments, Rapporteurship, Documentation
V	Information and Communication Technology (ICT) Literacy: Word processor, Excel, PageMaker, PDF conversion, Preparing PowerPoint Presentation
Learning outcomes:	
After completion of the course students should be able to cope with the transitive interactions in personal and professional lives. The course will equip students to develop expertise in the utilities of ICT in the transmission of knowledge.	
Assignments: Assignment will be based on Unit I, II, III, IV and V	

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Self-Enhancement Course (SEC)
Ability Enhancement Course (AEC)
Yogic Sciences

Unit - 1*

BASIC CONCEPT OF YOGA

1. Introduction to Yoga : Definitions of Yoga, Thinkers on yoga and their views - Patanjali, Gherand and; Goraksh; Karma Yoga, Bhakti Yoga and Gyan Yoga : Concept and Characteristics.
2. Raja Yoga : Eight steps of Yoga; Description and significance of Yamas and Niyamas.
3. Asanas and Pranayams : Methods, advantages and limitations; Concept of Prana and Nadis; The subtle body, Chakras.
4. Pratyahara and Dharana : Significance and techniques; Pratyahara and Dharana - Yoga Nidra, Antar Mouna, Ajapa Jap.
5. Hath Yoga : Shatkarmas- their methods, benefits and limitations
6. Body and Mind : Body-mind relation; the conscious, subconscious and unconscious; Psychosomatic disorders.

UNIT - 2

APPLICATIONS OF YOGA

1. Yogic Lifestyle and Health : Medical concept and definition of health, Causes of disease according to medical science and yoga; Basic instincts and their management through yoga;
2. Diet and Nutrition : Medical and Yogic concept of diet; the three Gunas in relation to diet.
3. Effect of Yoga on body systems : The Bones and Joints, Cardiovascular, Respiratory, Digestive, Nervous, Endocrinal and Excretory systems. Preventive, Promotive and curative effects of yoga.
4. Stress management : Concept and types of stress, Effects of stress on body and mind, Yogic management techniques.
5. Social Health management : Causes and effects of crime and substance abuse on society, Role of yoga as supporting and transforming agent.

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UNIT - 3 (Practical)

- (i) *Pranayamasana* - Part I, II and III
- (ii) *Relaxation asanas* - Shavasana, Advasana, Makarasana, Matsyakraidasana.
- (iii) *Meditative Asanas* - Padmasana, Siddhasana, Siddhayantrasana, Sukhasana.
- (iv) *Standing Asanas* - Tadasana, Tiryaktadasana, Katichakrasana, Dwikonasana, Trikonasana.
- (v) *Vajrasana series* - Vajrasana, Suptavajrasana, Singhasana, Shashankasana, Utrasana, Vyaghrasana.
- (vi) *Forward Bending Asanas* - Pashchimottanasana, Janushirasana.
- (vii) *Backward Bending Asanas* - Bhujangasana, Tiryakbhujangasana, Shalabhasana, Dhanurasana, Chakrasana, Gomukhasana, Kardhasana

UNIT - 4 (Practical)

- (i) *Gayatri Mantra Asana* - Suryanamaskar, Shankhprakhshalina Asanas.
- (ii) *Inverted Asanas* - Bhujipadmasana, Sarvangasana, Halasana.
- (iii) *Pranayama* - Prepranayama Practices, Yogic Breathing, Nadishodhan upto stage III, Kapalbhati, Bhastrika, Bhramari
- (iv) *Mudras and Kriyas* - Gyan, Chin, Shambhavi, Nasikagra, Ashwini, Khechari, Agrisar
- (v) *Bandhas* - Jalandhar, Moola, Uddiyana, Mahabandha
- (vi) *Shatkormar* - Kujjal, Jalneti, Laghooshanikhaprakshalana, Trataka.
- (vii) *Pratyahara* - Yoganidra, Antarmasana, Ajapa.

UNIT - 5

Assignment/Vocational Training

(*1 unit = 1 credit)

Unit 1+2 = 2x10 = 20 hrs

Units 3+4 (Practicals) = 2x20 = 40 hrs

Unit 5 (Vocational Training) = 10x2 = 20 hours

Total Programme = 20+40+20= 80 hours

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CBCS SYLLABUS

FOR

POST-GRADUATE COURSES

SUBJECT-ZOOLOGY

SUBMITTED BY

UNIVERSITY DEPARTMENR OF ZOOLOGY

B.R.A.B.U. MUZAFFARPUR

SEMESTER - I

Core Course (CC-1): Functional Biology of Invertebrates and Chordates Full Marks - 70
Time: 3 hrs

- Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 2 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit - I

- 1.1 Organization of coelom and its significance
- 1.2 Patterns of feeding and digestion in invertebrates
- 1.3 Invertebrate larvae: Types and significance

Unit - II

- 2.1 Respiratory pigments in different phylogenetic groups
- 2.2 Organs of Respiration in Invertebrates: Gills, Lungs and Tracheae
- 2.3 Mechanism of Respiration in Invertebrates

Unit - III

- 3.1 Organs of respiration in vertebrates: Gills, ARO and Lungs
- 3.2 Principles of gaseous exchange and Fick's modified equation
- 3.3 Transport of gases in blood and body fluid
- 3.4 Regulation of respiration (Neural and chemical control)
- 3.5 Respiratory adaptations at higher altitudes and in diving mammals

Unit - IV

- 4.1 Patterns of nitrogenous excretion in different phylogenetic groups
- 4.2 Organs of excretion: Coelomoducts, nephridia, malpighian tubules and Kidney
- 4.3 Mechanism of osmoregulation and excretion in aquatic (freshwater and marine) and terrestrial animals
- 4.4 Mechanism of acid-base balance

Unit - V

- 5.1 Thermoregulation in vertebrates
- 5.2 Mechanism of energetic of muscle contraction (Skeletal)
- 5.3 Physiology of electrical and synaptical transmitters in neurons
- 5.4 Neurotransmitters and their functions
- 5.5 Acoustico-lateral system and electroreception in aquatic vertebrates

SEMESTER - I

Core Course (CC- 2): Molecular Cell Biology

Full Marks - 70

Time: 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (five to be answered) of 3 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit I:

(a) Bio membrane

- 1.1 Molecular composition, arrangement and functional consequences
- 1.2 Models of bio-membrane
- 1.3 Transport across bio-membrane: diffusion, active transport and membrane pumps (P-type pump, V-type pump and ABC transporter)
- 1.4 Cotransport by symporters and antiporters

(b) Cytoskeleton

- 1.5 Microtubules and microfilaments: Structure and dynamics
- 1.6 Role of Kinesin and Dynein in intracellular transport
- 1.7 Axonal transport and cell movement (with respect to non-muscle motility)

Unit II: DNA replication

- 2.1 Outline of prokaryotic replication
- 2.2 Replication features of single stranded phages
- 2.3 Mechanism and machinery of replication in eukaryotes
- 2.4 DNA damage and repair mechanisms

Unit III: Transcription

- 3.1 Outline mechanism of prokaryotic transcription
- 3.2 Organization of eukaryotic transcription machinery
- 3.3 General and specific transcription factors
- 3.4 Regulatory elements & DNA binding domains of transcription apparatus
- 3.5 Processing of primary transcript & RNA editing in eukaryotes

Unit IV: Translation

- 4.1 Genetic code: Codon assignment and features
- 4.2 Outline of Prokaryotic translation
- 4.3 Eukaryotes translation: machinery (Ribosome & tRNA)
- 4.4 Eukaryotes translation: mechanism (Initiation, elongation and termination)

Unit V: Intra cellular protein trafficking

- 5.1 Targeting proteins to ER: Signal hypothesis
- 5.2 Co- and post - translational modifications of proteins
- 5.3 Trafficking mechanisms:
 - (a) Vesicular transport
 - (b) Protein sorting
 - (c) Endocytosis and exocytosis

SEMESTER - I

Core Course (CC- J): Genetics

Full Marks - 70

Time: 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 5 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit I: Organization of Chromosomes

- 1.1 Organization of prokaryotic chromosomes
- 1.2 Organization of eukaryotic chromosomes: Nucleosome as functional particle, 30 nm chromatin fibre, higher order structure of chromatin
- 1.3 Organization of centromere and kinetochore, Organization of telomere and its maintenance
- 1.4 Heterochromatin: Types, organization, formation and significance
- 1.5 Structural organization and functional significance of Polytene and Lampbrush chromosomes.

Unit II: Microbial genetics

- 2.1 Transformation, conjugation, transduction and sex-duction in bacteria
- 2.2 Construction of linkage map in bacteria
- 2.3 Molecular mechanism of recombination

Unit III: Cell cycle

- 3.1 Stages and check points in cell cycle
- 3.2 Genetics of cell cycle regulation: Role of cyclins and CDKs
- 3.3 Molecular basis of cellular check points

Unit IV: Sex determination and dosage compensation

- 4.1 Genetic and Molecular basis of sex determination in *Caenorhabditis elegans*, *Drosophila* & human
- 4.2 Genetic basis of dosage compensation in *Caenorhabditis elegans*, *Drosophila* & mammals

Unit V: Techniques & Methods in genetics

- 5.1 DNA sequencing: Maxam & Gilbert Method, Sanger's Dideoxy Method, chain termination method and automated sequencing, pyro-sequencing and whole genome short-gth sequencing.
- 5.2 DNA amplification: Polymerase chain reaction, its application and limitations.
- 5.3 DNA finger printing: VNTR profiling, STR profiling (Autosomal & Y Chromosome), mitochondrial DNA profiling and SNP profiling
- 5.4 Genome expression analysis: Southern, Northern & Western Blotting, Reverse Transcriptase, PCR, DNA micro array.

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SEMESTER - I

Core Course (CC- 4) Practical

Full Marks - 70 CIA

1st Sitting

1. Squash preparation using any of the following:	10	05
(a) Chromomus/Drosophila larvae for polytene chromosomes		
(b) Onion root tip for mitosis and mitotic index		
(c) Grasshopper testes for meiosis and related features		
2. Experimental demonstration (any one of the following):	10	05
(a) Enumeration of RBC		
(B) Enumeration of WBC (TC and DC)		
(C) Preparation of a histological slide of the given paraffin section/whole mount of an invertebrate larva	05	05
3. Identification and comments upon spots (cytological slides: Nos. 02)	05	05
<u>2nd Sitting</u>		
4. Identification and comments upon spots (Invertebrate slide-03, vertebrate slide-02)	10	05
5. Genetics (any of the following)	10	05
(a) Solving problems on Mendelian principles and sex-linked inheritance		
(b) Preparation of linkage map based on data from Drosophilla crosses and analysis in Neurospora		tetrad
(c) Pedigree analysis in human		
6. Class records, charts/ models & field collection	10	05
7. Viva-voce	10	05
	Total	70 30

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SEMESTER – II

Core Course (CC- 5): Environmental Science

Full Marks – 70

Time : 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 5 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit I: Concept and Dynamics of ecosystem

- 1.1 Abiotic factors and Biotic factors.
- 1.2 Energy flow
 - (a) Lindeman's rule of trophic dynamics
 - (b) Energy flow models
- 1.3 Biogeochemical cycles: Nitrogen, Carbon, Sulphur and Phosphorous cycle
- 1.4 Hydrological cycles.

Unit II: Principles pertaining to limiting factors

- 2.1 Liebig's Law of minimum, Shelford's Law of tolerance
- 2.2 Concept & Law of limiting factors
- 2.3 Factors compensation and ecotypes

Unit III: Population Growth, Predation and Regulation

- 3.1 Demography: Life tables, Generation time, Net reproductive rate, Reproductive value
- 3.2 Population growth: Exponential growth, Verhulst-Pearl logistic growth model.
- 3.3 Population regulation extrinsic and intrinsic mechanisms
- 3.4 Concept of niche, niche width and overlap, fundamental and realized niche, resource partitioning character displacement

Unit IV: Global Environmental Issues

- 4.1 Climate Change
- 4.2 Carbon Footprint
- 4.3 Water Security – conservation of surface and ground water
- 4.4 Wildlife conservation
 - (a) Causes of extinction
 - (b) National and International efforts for conservation (CITES, IUCN, CBD)
 - (c) National parks and sanctuaries
 - (d) Biosphere reserves
 - (e) Wildlife protection Acts

Unit V: Pollution Biology

- 5.1 Pollutants, their sources and classification
- 5.2 Causes, effects and control of Water and Air Pollution
- 5.3 Eutrophication and Intropication
- 5.4 Environmental Radioactive pollution
- 5.5 Emerging pollutants: POPs, Pharmaceuticals
- 5.6 Bio-indicators as index of pollution and their significance

SEMESTER – II

Core Course (CC-6) Bio-Instrumentation & Biostatistics

Full Marks – 70

Time – 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 3 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit – I

- 1.1 Principles and uses of analytical instruments – pH meter, colorimeter, Spectrophotometer, Ultra-centrifuge.
- 1.2 Microscopy – Principles of light, Transmission Electron, Scanning Electron, Fluorescence, Phase-contrast and Confocal Microscopes Photomicrography.

Unit – II

- (A) Separation techniques
1. Electrophoresis: SDS PAGE, Agarose gel electrophoresis
 2. Chromatography: Column, GLC, HPLC
 3. Organic separation by centrifugation
 4. Cell separation by flow cytometry and density gradient centrifugation
- (B) Immunological techniques
1. Radio-immunoassay (RIA)
 2. Enzyme-linked immunosorbent assay (ELISA)

Unit – III

- 4.1 Basic concepts in Biostatistics (sampling design, data collection and scaling techniques)
- 4.2 Mean: Arithmetic, Geometric & Harmonic Mean
- 4.3 Standard Deviation
- 4.4 Standard Error
- 4.4 Analysis of Variance (ANOVA)

Unit-IV

1. Correlation (Karl Pearson and Rank's correlation)
2. Regression

Unit – V

- 5.1 Rules of probability
- 5.2 Binomial probability distribution
- 5.3 Poisson probability distribution
- 5.4 Normal probability distributions
- 5.5 Test of Significance
 - (a) Chi-square test
 - (b) Student's t-test

SEMESTER – II

Core Course (CC- 7): Biochemistry

Full Marks – 70

Time : 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (four to be answered) of 5 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit-I: Bioenergetics

- 1.1 Laws of thermodynamics, internal energy, enthalpy, entropy
- 1.2 Concept of free energy, redox potential, energy rich compounds
- 1.3 Mitochondrial electron transport chain and oxidative phosphorylation

Unit-II: Biochemistry of Carbohydrates

- 2.1 Monosaccharides and Disaccharides, Types and properties
- 2.2 Polysaccharides: Homopolysaccharide and Heteropolysaccharide
- 2.3 Glycolysis, HMP shunt, Glycogenesis and Glycogenolysis

Unit-III: Biochemistry of proteins and lipids

- 3.1 Primary, secondary, tertiary, quaternary and domain structures
- 3.2 Stabilizing forces in protein structure
- 3.3 Peptide conformation (Ramachandran plot, helices, turns and sheets)
- 3.4 Biosynthesis of Urea
- 3.5 Free fatty acids: Synthesis and importance
- 3.6 β -Oxidation of long chain fatty acids

Unit – IV: Enzyme Biochemistry

- 4.1 Enzyme: Classification and nomenclature
- 4.2 Mechanism of enzyme action
- 4.3 Kinetics of enzyme catalyzed reaction
- 4.4 Non-genetic Regulation of enzyme activity:
 - (a) Feedback inhibition
 - (b) Allosteric inhibition
- 4.5 Free radicals, Antioxidants and detoxification

Unit – V: Principles of Histology and Histochemistry

- 5.1 General principles of fixation and types of fixatives
- 5.2 General principles of staining and types of dyes
- 5.3 General principles of histochemistry:
 - (a) Carbohydrate
 - (b) Protein
 - (c) Lipid
 - (d) Nucleic acids
 - (e) Enzymes

SEMESTER – II

Core Course (CC- 8): **Biosystematics and Evolution**

Full Marks – 70

Time – 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (four to be answered) of 3 marks each. Part C will consist of five questions (three to be answered) of 10 marks each.

Unit 1: Biosystematics

1. Definition & basic concept of Biosystematics and taxonomy, its importance and application in biology.
2. Hierarchy of categories, outline of classification of animals, important criteria used for classification up to Classes in each phylum
3. Species concept: Biological and phylogenetic, sub - species and other infra-specific categories, evolutionary relationships among taxa
4. International code of Zoological nomenclature (ICZN): operative principles, and important rules, Zoological nomenclature and scientific names of various taxa
1. Trends in taxonomy: Chemo - taxonomy, cyto - taxonomy and molecular taxonomy

Unit 2: Pattern of genetic variation and natural selection

1. Genetic polymorphisms, variation in chromosome structure, protein structure and nucleotide sequences
2. Concept of Natural Selection (Darwinian and neo-Darwinian), mode of its operation: stabilizing, directional and disruptive modes of Natural Selection

Unit 3: Molecular evolution

1. Variation in the evolution of protein and DNA sequences
2. Molecular phylogenies
3. Rates of molecular evolution and molecular clock
4. Neutral theory of molecular evolution
5. Origin of new genes and evolution of multi gene family

Unit 4: Mechanism of speciation

1. Patterns and mechanisms of reproductive isolation and its role in evolution
2. Models of speciation: sympatric and allopatric

Unit 5: Population genetics

1. Concept of Gene pool, allele frequency and genotype frequency
2. Hardy-Weinberg principle of genetic equilibrium and its mathematical derivation
3. Detailed account of destabilizing forces of genetic equilibrium: Natural selection, Mutation, Migration, Meiotic drive, and Genetic Drift

SEMESTER - II

Course (CC-9) Practical	First Sitting	Full Marks - 70,	CIA - 30
1. Biochemical experiments (any one of the following) (a) Determination of salivary amylase activity (b) Colorimetric estimation of glucose, urea, uric acid or albumen in a given sample (c) Separation of amino acids by paper chromatography (d) Biochemical detection of glucose, starch, protein or lipid in a given sample		10	05
2. Identify and comment upon the spots of evolutionary significance (any one of the following) (a) Archaeopteryx (b) Darwin's finches (c) Serial homology in cephalothoracic appendages in prawn (d) Homology in Anology (e) Adaptive radiation in beaks of birds		10	05
3. Histochemistry; Histochemical demonstration involving the following reagents: PAS, Alvan Blue, Sudan Black B, Sudan III/IV, Fastgreen, Methyl green- Pyronin, Mercuric bromophenol or Preparation of temporary mount of any two of the specimens of plankton		10	05
Second Sitting			
4. Environmental studies (any one of the following) (i) Measurement of pH (ii) Estimation of dissolved O ₂ (iii) Estimation of free CO ₂ (iv) Estimation of carbonate & bicarbonate alkalinity (v) Composition & assessment of the taxonomic diversity/biodiversity in a habitat (of grassland, pond & wetland) (vi) Estimation of the total hardness		10	05
5. Statistics: Standard deviation, standard error, correlation, regression, t-test		10	05
6. Class record		10	
7. Viva-voce		10	05

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SEMESTER - III

Core Course (CC- III) Vertebrate Immunology

Full Marks - 70

Time - 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (four to be answered) of 3 marks each. Part C will consist of five questions (three to be answered) of 10 marks each.

Unit 1: Innate and Acquired Immunology

1. Cell types of innate and adaptive immunity, Lymphocyte trafficking
2. Phagocytosis and inflammation
3. Humoral immunity; β cell activation and differentiation, primary and secondary humoral response
4. Cell mediated immunity: T - cell development and T-cell activation, CTL and NK cell mediated immunity

Unit 2: (A) Nature of Antigens

1. Antigenicity and Immunogenicity, and the factors influencing it.
2. Characteristics of β and T cell epitopes and haptens
3. Super antigen and its role in T cell activation
4. Antigen processing and presentation
5. MHC complex

(B) Structure and functions of Antibodies

- (a) Gross and fine structure
- (b) Classes and sub-classes
- (c) Antibody mediated effector functions and monoclonal antibodies

Unit 3: (A) Antigen- antibody interaction and Complement system

1. Antibody affinity and antibody avidity
2. Precipitation reactions
3. Agglutination reactions
4. Complement System - activation pathway, biological function and complement deficiencies
5. EUSA

(B) Cytokines : Classification and function, Cytokines receptors.

Unit 4: Organization and expression of Ig genes

1. Organization of Ig genes
2. Generation of antibody diversity
3. BCR and Genealogy of T-cell receptor diversity

Unit 5: Immunology and Diseases

1. Hypersensitivity (Type I, II, III, IV).
2. Auto-immunity
3. Immune responses to infectious agents - bacterial, viral and parasitic infection (Protozoa and Helminth parasites).
4. Immunodeficiencies

SEMESTER – III

Core Course (CC- III): Gamete and Developmental Biology

Full Marks – 20

Time – 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 3 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit-I: Gamete Biology

- 1.1 Cellular basis of spermatogenesis and Biochemistry of semen
- 1.2 Ovarian follicular growth and differentiation
- 1.3 Oogenesis and ootidogenesis
- 1.4 Ovulation and oviduct transport
- 1.5 Molecular events during fertilization

Unit II: (A) Multiple ovulation and Embryo transfer technology in human being

- 2.1 In vitro oocyte maturation
- 2.2 Super ovulation
- 2.3 In vitro fertilization

(B) Assisted Reproduction technologies

- 2.4 Collection and preservation of gametes
- 2.5 IVF, ZIFT & Insempo - contraception

Unit III: Basic concept of development

- 3.1 Potency, commitment, specification, induction, competence, determination and differentiation
- 3.2 Morphogenetic gradients, cell fate and cell lineages, genomic equivalence and cytoplasmic determinants.

Unit IV: Differentiation, morphogenesis and organogenesis

- 4.1 Cell differentiation: Role of cytoplasm and nucleus
- 4.2 Gene amplification and rearrangement during development
- 4.3 Axes and pattern formation in Drosophila.
- 4.4 Limb development and regeneration in vertebrates

Unit V: Stem cell Biology

- 5.1 Definition and characteristics of stem cell
- 5.2 Type of stem cell (embryonic, adult and cancer stem cell)
- 5.3 Nuclear reprogramming of induced pluripotent stem cell, test for pluripotency
- 5.4 Potential application of stem cells, therapeutic cloning

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SEMESTER – III

Core Course (CC- 12): Vertebrate Endocrinology

Marks – 70

Full

Time: 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (four to be answered) of 3 marks each. Part C will consist of five questions (three to be answered) of 10 marks each.

Time: 3 hrs.

Unit-I

- 1.1 Aims and scope of endocrinology
- 1.2 Hormones as messengers
- 1.3 Chemical nature and gross features of hormones
- 1.4 Neuro-endocrine system and neurosecretion
- 1.5 Hypothalamic control of endocrine system

Unit-II

- 2.1 Hormones involved in reproduction
 - (a) Seasonal breeders
 - (b) Continuous breeders
- 2.2 Hormonal regulation of reproductive cycle
 - (a) Ovarian cycle
 - (b) Menstrual cycle
 - (c) Oestrus cycle

Unit-III

- 3.1 Biosynthesis of steroid hormones
- 3.2 Biosynthesis of amino acid derived hormones (T₄, Epinephrine)
- 3.3 Biosynthesis of simple peptide hormones, Piv and Prohormones.

Unit-IV Hormone Receptors:

- 4.1 β -adrenergic receptor
- 4.2 Insulin receptor
- 4.3 Steroid hormone receptor

Unit-V: General principles of hormone actions (signal transduction)

- 5.1 Second messenger concept (G proteins, Nucleotides (cAMP, cGMP), Calcium, Calmodulin, Phospholipide)
- 5.2 Lipid soluble hormones and intracellular receptor
- 5.3 Lipid insoluble hormone and intracellular signalling

SEMESTER – III

• Core Course (CC- 12): Animal Behaviour

Full Marks – 70

Time : 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 5 marks each. Part C will consist of five questions (three to be answered) of 10 marks each.

Time: 3 hrs.

Unit-I: Basics of Animal Behaviour

1.1 Ethology- Definition, Branches, Significance

1.2 Approaches and methods in the study of Behavior

1.3 Patterns of Behavior-

(a) Innate behavior- Kinesis/ Taxes, Simple reflex, Comparison of reflex and complex behaviors, Instinct and Motivation

(b) Learned behavior- Habituation, Imprinting, Conditioned reflex, Trial & error learning, Reinforcing and Cognition

Unit II: Social Behavior

2.1 Social behavior of insects (Honey bees, Ants and termites)

2.2 Schooling in fish, Flocking in birds,

2.3 Social organization of Primates

2.4 Parental care in fishes

2.5 Altruism: Reciprocal altruism, Inclusive fitness, group selection, and Kin – selection

Unit III: Reproductive Behavior

3.1 Evolution of sex and reproductive strategies

3.2 Mating system

3.3 Courtship & Parental Behaviors: Parental care and parental investment

Unit IV: Biological Rhythms

4.1 Circadian, Circannual, Lunar, Tidal and Epicycles

4.2 Navigation including orientation

4.3 Migration of Fishes and Birds

Unit V: Control of Behavior

5.1 Neural control of Behaviour

5.2 Hormones and Behavior

5.3 Ecological aspects of behavior: Habitat selection, Optimal foraging theory, and Aggressive behavior

SEMESTER - III

Core Course(CC- 14) Practical

Time : 6 hrs

Full marks - 70 CIA-30

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|---|-------|
| 1. Any one of the immunological experiments
(a) Determination of blood group using ABO antisera
(b) Preparation of blood film and identification of blood cells of immunological importance
(c) Hormonal assessment of T/T testosterone/estrogen by ELISA reader | 10 05 |
| 2. Identify and comment upon the given spots
(a) Endocrinological slides-01
(b) Embryological slides -02 | 10 05 |
| 3. Prepare a permanent mount of chick embryo or
Identify and comment upon the exposed endocrine glands in a mammal | 10 05 |
| 4. Comment upon the behavioural aspects of specimens provided
(any two)
(a) Parental care (Elipposampus, Cichlids, Alytes, Hyla, Ichthyophis)
(b) Caste system (Honey bee/termites/ants) and its significance
(c) Dance as means of communication in honey bees | 10 05 |
| 5. Identification and comment upon the given embryonic stages
(any two) | 10 05 |
| 6. Class record | 10 |
| 7. Viva voce | 10 |

10/10/20

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List of Elective Courses (EC):

- (1) Cell and Molecular Biology (EC-1A & 2A)
- (2) Fish and Inland Fisheries (EC-1B & 2B)
- (3) Environmental Biology (EC-1C & 2C)
- (4) Entomology (EC-1D & 2D)
- (5) Parasitology (EC-1E & 2E)
- (6) Cytogenetics (EC-1F & 2F)
- (7) Comparative Endocrinology (EC-1G & 2G)

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SEMESTER – IV

EC - 1A Elective paper : Cell and Molecular Biology

Full Marks – 70

Time : 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 3 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit I: (A) Regulation of gene expression in bacteria

- 1.1 Inducible system: Lac operon with negative control and Positive control (CAP/ cAMP regulation)
- 1.2 Repressible system: Tryptophan operon and mechanism of attenuation in *E. coli* & *B. subtilis*
- 1.3 The arabinose operon

(B) Levels of gene regulation in eukaryotes

- 1.4 Transcriptional control involving chromatin remodelling and genome imprinting
- 1.5 Post - transcriptional control involving alternate polyadenylation and alternate splicing
- 1.6 Translational control involving Ribosome selection, translation inhibition, mRNA degradation and gene silencing (RNA interference)

Unit II: (A) Cancer Biology

- 2.1 Cytology of cancer cells and types of cancer
- 2.2 Genetic basis: Oncogenes and tumour - suppressor genes
- 2.3 Chromosomal anomalies associated with cancer

(B) Apoptosis

- 2.4 Machinery of programmed cell death
- 2.5 Extrinsic and intrinsic pathways
- 2.6 Control of programmed cell death

Unit-III: (A) Nucleus

- 3.1 Functional architecture of interphase nucleus and nuclear envelope
- 3.2 Ultra structure of nucleolus: organization of fibrils
- 3.3 Nucleolar function: synthesis of rRNA, its processing and biogenesis of ribosomes
- 3.4 Mechanism of nuclear cytoplasmic exchange

(B): Cell - cell signaling

- 3.5 Signaling from plasma membrane to nucleus: Type of signal (G protein and protein kinases), target cells and effector organs
- 3.6 Cell surface receptors of signaling molecules
- 3.7 Signal transduction pathways and their regulation
Second messenger system

Unit-IV: (A) Genomics

- 4.1 Functional genomics: Predicting gene and protein function by sequence analysis
- 4.2 Genome organization in humans: The Human Genome Project, main features of human genome

4.3 Gene Therapy Prospect & Application

(B) Recombinant DNA Technology

- 4.4 Tools and techniques (enzymes, vectors, cloning strategies)
- 4.5 Construction and screening of DNA libraries
- 4.6 Application of recombinant DNA technology

Unit-VI Transposable genetic elements and Epigenetics

- 5.1 Discovery and definition: Ac/Ds elements in maize
- 5.2 Prokaryotic elements: insertion sequences and transposons
- 5.3 Retrotransposons and DNA transposons in eukaryotes
- 5.4 Mechanism of transposition (conservative and replicative)

10/20/17

10/20/17

10/20/17

SEMESTER - IV

EC - 1A Elective paper (Practical): Cell and Molecular Biology
Time: 6 hrs

Full Marks - 70 CIA-30

1st sitting

1.	Cytochemical demonstration of protein/lipid/carbohydrate/nucleic acids	15	05
2.	Vital staining of secretory granules and mitochondria	10	05
3.	Identify and comments up on spots (1-5): Cytological slides	10	05

2nd sitting

4.	Any one of the following:	10	05
(a)	Estimation of sperm count from epididymal wash of laboratory mammals		
(b)	Isolation of DNA and its separation by agarose gel electrophoresis (demonstration)		
2.	Practical records (including slides, charts, model, field work)	05	05
5.	Dissertation and Viva-voce	30	05

[Handwritten signatures and scribbles]

SEMESTER - IV

EC - 1B Elective paper : Fish and Inland Fisheries

Full Marks - 70

Time : 2 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 3 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Fish Biology

Unit I: (A) Taxonomy and evolution

- 1.1 Classification of fishes
- 1.2 Origin and evolution of elasmobranch
- 1.3 Origin and evolution of teleost
- 1.4 Crossopterygic distribution, structure and affinities
- 1.5 Molelecephali: structure and affinities

(B) Fish Anatomy

- 1.6 Integument: Structure and function
- 1.7 Alimentary canal & its modification in relation to feeding habit
- 1.8 Acoustico-lateralis system
- 1.9 Air bladder & its modification

Unit II: (A) Fish Physiology

- 2.1 Mechanism of gill respiration
- 2.2 Accessory respiratory organs
- 2.3 Sound production
- 2.4 Excretion and osmoregulation
- 2.5 Reproduction in fish

(B) Fish endocrinology

- 2.6 Pituitary
- 2.7 Thyroid
- 2.8 Adrenal
- 2.9 Corpuscles of Starks and Hepatopancreas

Applied Fisheries

Unit III: Fresh water Aquaculture

- 3.1 Construction and lay out plan of different types of ponds and their management
- 3.2 Role of physico-chemical and biological factors in aquaculture
- 3.3 Aquatic weeds & their control
- 3.4 Pen & cage culture
- 3.5 collection and transport of fish seeds from riverine resources
- 3.6 Fish food organisms; Types and their culture; supplementary feeding
- 3.7 Pollutants and their effect on fisheries

Unit IV: (A) Fish Pathology

- 4.1 Nutritional diseases
- 4.2 Intrinsic diseases
- 4.3 Bacterial diseases in fish and their control
- 4.4 Fungal and viral diseases in fish and their control
- 4.5 Parasitic diseases in fish and their control

(B) Fish biotechnology

- 4.6 Cryopreservation of fish gamete
- 4.7 Induced breeding in fish using Carp pituitary extract (CPE) and new generation drugs

- 4.8 Androgenesis, Gynogenesis and transgenic fish
- 4.9 Cytogenetical techniques in aquaculture
- 4.10 Integrated fish farming

Unit V: (A) Fisheries resources

- 5.1 Riverine fisheries resources of India
- 5.2 Reservoir fisheries in India
- 5.3 Lacustrine fisheries in India
- 5.4 Estuarine fisheries in India

(B) Post harvest Technology

- 5.5 Principles and methods of inland fishing crafts and gears
- 5.6 Fish spoilage and methods of fish preservation
- 5.7 Fish byproducts
- 5.8 Fish marketing

100
10/10/20

4-5
10-10

SEMESTER – IV

EC – 1B Elective paper (Practical): Fish and Inland Fisheries

Time : 4 hrs

Full Marks – 70

04-20

1st Sitting

- | | | |
|--|------------|----|
| 1. Any one of the following experiments: | 10 | 05 |
| i) O ₂ Consumption in relation to body size | | |
| ii) Hematological analysis (Hb estimation, RBC counting) | | |
| iii) Estimation of pH using pH meter, Dissolved Oxygen, Total alkalinity, Total Hardness | | |
| 2. Spotting: | 5 x 2 = 10 | 05 |
| i) Museum specimen | - 01 | |
| ii) Bones | - 01 | |
| iii) Slides | - 02 | |
| iv) Fishing gear/aquatic weeds | - 01 | |
| 3. Microtomy/paraffin sectioning and permanent slide preparation | 10 | 05 |
| or | | |
| Mounting: scales, olfactory lamella, respiratory epithelium | | |

2nd Sitting

- | | | |
|---|----|----|
| 4. Taxonomic identification of a local available fish up to species level (based upon morphometric- meristic analysis and identification key) | 05 | 05 |
| 5. Any one of the following: | 10 | 05 |
| i) Biological analysis of water including Phytoplankton, Zooplankton, Macrophytes and Zoosarcobenthos. | | |
| ii) Identification of representative fish parasites and their life histories | | |
| iii) Identification of fry and fingerlings of major cultivated species of fresh water fish | | |
| 6. Practical records (including slides/chart/model/field work) | 05 | |
| 7. Dissertation and Viva | 20 | 05 |

$\frac{100}{100} \times \frac{60}{70} = \frac{600}{70} = 8.57$

SEMESTER - IV

EC - 10 Elective paper : Entomology

Time : 2 hrs

Full Marks - 70

- Options to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions (Four to be answered) of 3 marks each. Part C will consist of five long questions (Three to be answered) of 10 marks each.

Unit I: (A) Classification

- 1.1 Outline of classification of class Insecta upto suborders
- 1.2 Classification upto superfamilies in following economically important groups (Coleoptera, Hemiptera and Lepidoptera, Diptera)
- 1.3 Origin of insects.

(B) Morphology

- 1.4 General organization of insect body
- 1.5 Comparative study of Antennae and their modification
- 1.6 Comparative study of Mouth parts: structure, modification and function
- 1.7 Comparative study of Legs and their modification
- 1.8 Compound eye: structure including image formation
- 1.9 Wings: Venations and modifications
- 1.10 Integument: structure and moulting
- 1.11 Genitalia

Unit II: (A) Insect Physiology

- 2.1 Alimentary canal: Structure and Physiology of digestion.
- 2.2 Tracheal system: Structure and Physiology of Respiration
- 2.3 Excretory system: Structure & types of Malpighian tubules, Physiology of Excretion and osmoregulation
- 2.4 Haemolymph: Composition and function.

(B) Neuro-Endocrinology

- 2.5 Brain: Protocerebrum, Deutocerebrum & Tritocerebrum
- 2.6 Ventral nerve cord and ganglia
- 2.7 Neuro-endocrine glands: Types, structure & function
- 2.8 Neuro-haemal organs: corpora cardiaca and Aorta

Unit III: (A) Insect Control and Management

- 3.1 Chemical Control: Types (Chitin synthesis inhibitor, ecdynoids, juvenoids and anti-hormones) merits and demerits
- 3.2 Biological control: Types (parasites, parasitoids and predators) merits and demerits
- 3.3 Integrated Pest Management (IPM): Definition, tool, basic principle and importance

100/24/15
100/24/15
100/24/15

(B) Chemical nature and function

3.4 Pheromones

3.5 Diapause

3.6 Attractants, repellants and anti-feedants

Unit IV: Reproductions and Development

4.1 Male reproductive organs: Testes, Vas deferens, ejaculatory duct, accessory glands & seminal vesicles

4.2 Female reproductive organs: Ovaries, types of ovarioles, oviduct & common oviduct and accessory glands

4.3 Types of Larvae and their metamorphoses

Unit V(A) Agricultural Entomology

5.1 Pests of Paddy: Life history and control measures

5.2 Pests of Wheat: Life history and control measures

5.3 Pests of Sugarcane and stored grains: Life history and control measures

5.4 Pests of Vegetable and stored grains: Life history and control measures

(B) Veterinary Entomology

5.5 Bionomics, life cycle, prevention and control of house fly (*Fabonax* spp.) and Black fly (*Simulium* spp.)

5.6 Insect of medical importance associated with disease transmission (Malaria, Filaria and Kala-azar): Biology and control

(C) Forensic Entomology

5.7 Forensically important insects

5.8 Collection of data from cadaver site

5.9 Interpretation of data for predicting time and cause of death

SEMESTER - IV

EC - 20 Elective paper (Practical): Entomology

Time : 4 hrs

Full Marks - 70

CIA- 30

- | | | | |
|----|---|---------|----|
| 1. | Any one of the following experiments: | 10 | 05 |
| | (i) Dissection of grasshopper or honey bee or wasp to expose general anatomy and nervous system | | |
| | or | | |
| | (ii) Identification of any two insects [5=2] | | |
| 2. | Permanent slide preparation of any one | 10 | 05 |
| | (i) Whole specimen (small insect) | | |
| | (ii) Mouth parts | | |
| | (iii) Antennae | | |
| | (iv) Legs | | |
| | (v) Wings | | |
| | (vi) Poison apparatus | | |
| | (vii) External genitalia | | |
| | (viii) Spiracles | | |
| | (ix) Gills of aquatic insect | | |
| 3. | Identification and comments upon spots 1-5 | 3x5= 15 | 05 |
| | (i) Morphological slides -2 | | |
| | (ii) Histological slides -2 | | |
| | (iii) Damaged material by a pest- 1 | | |

2nd sitting

- | | | | |
|----|---|----|----|
| 4. | Identification and life history of any one pest | 10 | 05 |
| 5. | Field works and records | 05 | 05 |
| 6. | Dissertation & Viva voce | 20 | 05 |

Handwritten notes:
 100/200
 1/2
 1/2
 1/2

SEMESTER – IV

EC - 1C : Elective paper : Environmental Biology

Time : 3 hrs

Full Marks – 70

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions/Four to be answered of 3 marks each. Part C will consist of five long questions (three to be answered) of 10 marks each.

Unit 1 : (A) Concept and dynamics of ecosystem

- 1.1 Biological productivity, primary production and method of its measurement
 - 1.2 structure and function of major ecosystem's of the world (fresh water ecosystems, forest ecosystems, grassland, desert ecosystem)
- (B) Limnology

- 1.3 Origin and types of lakes
- 1.4 Ecological zonation in lakes

Unit 2 : (A) Population ecology

- 2.1 Concept of meta-population, demes and dispersal, inter-demic extinctions, age structured populations.
 - 2.2 Stochastic and time lag models of population growth. Lotka-Volterra equation for competition and predation, functional and numerical responses.
- (B) Community ecology & succession

- 2.3 Nature of communities, community structure and attributes
- 2.4 Levels of species diversity and its measurements
- 2.5 Influence of population interaction on communities, types, mechanisms
- 2.6 Changes involved in succession, concept of climax

Unit III : (A) Biodiversity

- 3.1 Importance, status, monitoring, documentation, threats and conservation of biological diversity.
 - 3.2 Shannon-Weiner index, dominance index, Similarity index, Association index
- (B) Wildlife Management

- 3.3 Principles of conservation
- 3.4 Major approaches to management, and Indian case studies on conservation/management strategy (project tiger, biosphere reserves)

Unit IV : (A) Pollution and environmental health

- 4.1 Global environmental problems, global warming, ozone depletion, acid rain, photochemical smog
 - 4.2 Sources, hazards and control of air, water and solid waste pollution
- (B) Ecotoxicology
- 4.3 Definition of toxicology
 - 4.4 Toxic substances in the environment
 - 4.5 Concept of dose response relationship

- 4.6 Acute toxicity, chronic toxicity, lethal concentration, effective concentration
- 4.7 Bioaccumulation, biomagnification, median tolerance limits.

Unit V (4) Environmental monitoring

- 5.1 Chemical and biological monitoring
- 5.2 Concept of indicator organisms and bio-monitoring of water quality
- 5.3 Concept of biotic and diversity indices.

- 5.4 Need and scope of bioremediation, environmental applications of bioremediation, future outlook
- 5.5 Phytoremediation- biotechnology of cleaning up the environment by plants

SEMESTER - IV

EC - 2C Elective paper (Practical): Environmental Biology

Time : 6 hrs

Full Marks - 70 CIA-30

Ist sitting

1. Qualitative and quantitative estimation of Zooplankton and Benthos	30	05
2. Studies of soil fauna by Quadrats method	05	05
3. Physico-chemical analysis of any one	10	05
(a) Water : DO, BOD, COD, Chloride, Carbonate and Bicarbonate alkalinity, Calcium and Magnesium hardness / Ca^{++} and Mg^{++}		
(b) Soil: pH, Chloride, Total alkalinity, Hardness, Water retention capacity of different types of soil.		
4. Estimation of Nitrite, Sulphate, and Phosphate by Spectrophotometry.	10	05

IInd sitting

5. Spotting - Zooplankton, Zoo-macro-benthos, Nekton (2x5)	30	05
7. Class Records	05	
8. Dissertation including Power Point Presentation and viva	20	05