Course Name

M.A.

M.Sc.

M.A. & M.Sc. both

M.Com.

Courses/Special Subject

M.Sc. in Bio-chemisty

M.Sc. in Agricultural Science (Botany/ Chemistry & Soil Science/Zoology & Entomology)

M.A. Mass Communication

New Courses

M.F.A. (Master in Fine Arts)

M.Sc. in Cognitive Science

M.A. in Theatre & Film

Master in Development Studies

M.Sc. in Material Science

Integrated M.Tech. in Earth System Sciences

M.Sc. in Bioinformatics

M.Sc. Environmental Science

M.Sc. in Textile and Apparel Designing

M.Sc. in Computer Science

M.Sc. in Applied Geology

M.P.Ed.

M.A. (Master of Arts)

S. No.	Subject Name
1.	ANCIENT HISTORY
2.	ECONOMICS
3.	EDUCATION
4.	ENGLISH LITERATURE/LANGUAGE
5.	HINDI
6.	MEDIEVAL AND MODERN HISTORY
7.	MUSIC
8.	M.MUS.
9.	PAINTING
10.	PHILOSOPHY
11.	POLITICAL SCIENCE
12.	SANSKRIT
13.	SOCIOLOGY (NEW COURSE)
14.	URDU

1. ANCIENT HISTORY

The syllabus will include the following Four Units.

(a) Political History of India

(b) Indian culture

(c) Art and Archaeology

(d) Ancient Civilizations

2. ECONOMICS

Department of Special Assistance

Part-A

Economic Theory, Macro Economics, Development and Planning, Money Banking and Public Finance, Economic Analysis, International Economics.

Part-B

Indian Economy, India's Economic Policy, Statistics.

3. EDUCATION

1. Meaning and Aims of Education, Agencies of Education.
2. Study of naturalism, idealism, pragmatism and realism.
3. Nature and methods of Educational Psychology, Growth and Development of the child.
4. Measurement and Evaluation, Essay and objective type tests, characteristics of good test.
5. Problems of Primary, Secondary and Higher Education in India, Educational Technology.

4. ENGLISH

Note : Candidates can attempt either English Literature or English Language question paper.

ENGLISH LITERATURE SYLLABUS

Part I Short answer questions:

This part will consist of two passages for critical appreciation a prose and a poetry passage.

Part II: Medium answer questions :

This part will consist of two units of three topics each. The first unit will comprise of topics on the history of English Literature, while the second of

topics on literary terms. Candidates will have to write two essays of about 150 words each, selecting one topic from each unit.

B.A. Part III: English Literature

Paper I: Fiction, Paper II: Drama,

Paper III: Poetry and Practical Criticism

B.A. Part II: English Literature

Paper I: Poetry, Paper II: Drama,

Paper III: Prose & Fiction

B.A. Part I: English Literature

Paper I: Poetry, Paper II: Drama,

Paper III: Prose & Fiction

ENGLISH LANGUAGE SYLLABUS

B.A. Part I

Paper I

1. English Through Reading,
2. Language Through Literature

Paper II

1. Comprehension of two unseen passages of the level,
2. Two Composition exercise based on Units 1 to 4 of **Writing with a Purpose,** Champa Tickoo & Jaya Sasikumar (O.U.P).
3. Translation of a passage from Hindi to English or comprehension.

B.A. Part II

Paper I

Books prescribed for detailed study :

Bertrand Russel, Unpopular Essays (Unwin Books) Chapters, II, III, VI, VII, IX, X are prescribed. Bhaskar & Prabhu, English Through Reading Vol. II, (Macmillan)

Paper-II

Books prescribed:

Wrenn, The English Language (Vikas), Champa Tickoo & Jaya Sasikumar: Writing with Purpose (C.U.R)

B.A. Part III

Paper-I : Essay and Precis, Paper-II : Writing Skills

Paper-III : Language, Through Literature

5. HINDI

Hidi Sahitya ka Itihas, Bhasha Vigyan,

Bhartiya Kavyashastra, Pashchatya Kavyashastra, Kavyabhasha, AAlochana aur Shahitya Chintan ki Nai Dishayen.

6. MEDIEVAL AND MODERN HISTORY

SECTION A : HISTORY OF THE MODERN WORLD (1453-1945) : A survey of the Political, Social Economic and Cultural history of the Modern World,

SECTION B : HISTORY OF MEDIEVAL INDIA (1206-1740)

SECTION C : HISTORY OF THE MODERN INDIA (1740-1950)

7. M.A. MUSIC / 8. M. MUS

A. Unit I (Common for all): History, Science of Music and Notation System.
B. Unit II (For Vocal)
C. Unit III (For Instrumental Sitar)
D. Unit III (For Instrumental Tabla)

9. M.A. (PAINTING)

Theory : 300 Marks

(Through Admission Test conducted by the University of Allahabad)

Syllabus : Aesthetics & Art Appreciation, History of Indian and Western Art & Current trends in Art Scenario.

Practical : 100 Marks

(A) Life Drawing, Time : 120 minutes of 50 Marks in any medium.

(B) Portrait, Time : 120 minutes of 50 Marks of water colour.

(The Practical Test will be conducted by the Department. The candidates are advised to contact the Head, Visual Arts Department for Practical Test).

10. PHILOSOPHY

1. Ethics 2. Indian Philosophy
3. Western Philosophy 4. Logic
5. Theory of Knowledge 6. Philosophy of Religion 7. Socio-Political Philosophy

11. POLITICAL SCIENCE

1. Political Theory

2. Indian Government and Politics
3. Western Political Thought from Plato to Marx.
4. Comparative Government and Politics
5. Indian Political Thinkers
6. International Relations
7. Indian Administration

12. SANSKRIT

Group A

(i) AbhijnanShakuntalam-uptoVAct
(ii) Poorva Megh - upto 30 slokas
(iii) Kiratarjuniyam-Prathamah sargah
(iv) Sanskrit Gadyalok
(v) Following Suktas of Rigveda:
(a) Vishvedeva Siktam, (b)Vishnu Suktam
(c) IndraSuktam, (d) Prajapati Suktam
(e) Purush Suktam, (f) Vak Suktam
(g) Shivsankalpa Suktam (From Shukla Yajurved)
(vi) Sangya & Sandhi prakaranas of Laghu Siddhanta kaumudi
(vii) Niti Shatak - upto 30 Slokas

Group B

(i) Sahitya Darpan (First & Second Parichcheda Only)
(ii) Uttar Ram Charitam - upto Nlrd Act
(iii) TarkSangraha
(iv) Sri Mad Bhagawad Geeta (Second. Third & Ninth Chapters Only)
(v) Karak Prakaran of Madhya Siddhant Kaumudi (Practical Knowledge Only)

13. SOCIOLOGY

Eligibility : A student seeking admission to M.A. Sociology must have obtained a Bachelor's degree from an accredited institution/University. Only those candidates who have obtained their B.A. degree with Sociology/Anthropology as one of the subjects in the third year will be eligible for admission to M.A. Degree in Sociology.

Syllabus for Admission Test

1. **Basic Concepts :** Society, Community, Culture, Civilization; Socialization, Social Structure and function; Institutions and Association; Social groups and its types; Customs, Norms, values, sanctions and laws; status, Roles and their types.
2. **Institutions :** Institutions of **Kinship** (Descent and kinship; Lineage, Gotra, phratry, moiety); **Family** (its types); **Marriage** (its forms) and their regional variations in India; **Economy** : Urban, Rural and Tribal economies (Concept of Property, Division of Labour, Primitive Communism, Jajmani relations; Economic & ceremonial Exchange among tribes); **Religion :** Totemic, Animism, Shamanism, priesthood; Magic, Religion and Science; Polity interaction between caste, religion & polity; Caste, Panchayats.
3. **Socio-cultural processes, Social Change, Inequality, change and movement, Basic ideas of Pioneer thinkers.**
5. **Social Research :** Positivism and empiricism in sociology, Methods (historical, comparative, functional and dialectical), Types of research and Research designs (Exploratory, Descriptive and Experimental), Steps in social research; Sampling and its types; **Methods & Techniques :** ethnography, observation, case study, content analysis, Survey, questionnaire, schedule and interview; **Data analysis :** Measures of central tendency Chi-square.
6. **Indian social milieu.**
7. **Social Problems.**

14. URDU

Syllabus of Urdu subject (Graduation level course) of University of Allahabad

M.Sc. (Master of Science)

S.No.	Subject Name
15.	BOTANY
16.	CHEMISTRY
17.	PHYSICS
18.	ZOOLOGY
19.	COMPUTER SCIENCE
20.	APPLIED GEOLOGY

15. BOTANY

Fungi; Lichens; Bacteria and Plant Viruses; Algae; Bryophyte; Pteridophyta; Gymnospermophyta; Taxonomy; Morphology & Anatomy; Life History; Plant Physiology; Plant Ecology; Cytology; Genetics; Molecular Biology; Evolution; Microbiology And Applied Microbiology; Genetic Engineering, Plant Pathology; Economic Botany; Applied Plant Anatomy; Plant Breeding; Marine Biology & Limnology; Palaeobotany and Palynology; Plant Diversification; Morphogenesis and Tissue Culture.

16. CHEMISTRY

A. (PHYSICAL CHEMISTRY)

Thermodynamics, Chemical Kinetics and Catalysis, Chain Reactions and Photochemistry, Electro-chemistry, Atomic Structure, Gasses State, Surface Phenomenon.

B. (ORGANIC CHEMISTRY)

Bonding in Carbon Compounds, Aromaticity and Huckel's rule, Aliphatic and Aromatic Aldehydes and Ketones, (i) Optical Isomerism (ii) Geometrical Isomerism, Active Methylene Compounds, Spectroscopy U.V. Visible, NMR, Cycloparaffins, Carbohydrates, Diazonium compounds, Synthetic Polymers, Synthetic applications of Grignard reagents.

C. (INORGANIC CHEMISTRY)

Atomic Structures and Periodic Properties, Chemical Bonding and Molecular Structure, Co-ordination Chemistry, Chemistry of Representative Elements, Transition metals including Lanthanides, Extractive Metallurgy, Environmental Pollution, Metal Ions in Biological Systems, Preparation, properties and Structures, Inorganic Analysis

17. PHYSICS

Thermodynamic equilibrium, Zeroth law, first law, second law, reversible process, Carnot's theorem, entropy and disorder; thermodynamic relations and applications. Clausius-Clayperon equation, phase transitions of first and second order.

Radiation as e.m. wave, Kirchhoffs law. black body radiation, pressure and energy density, Stefan-Boltzmann law, Planck's law and its limiting cases. Phase space, ensembles, equilibrium and fluctuation, entropy and probability, entropy of a perfect gas, microcanonical, canonical and grand canonical ensembles, partition function, Boltzmann distribution, B.E. and FD. statistics, simple applications.

Gauss' Law, Blot-Savart law, Vector Potential, Faraday law. Amperes circuital law, generalization of Ampere's law by Maxwell, Maxwell's equations and its solution in free space and simple dielectrics. Poynting theorem, plane wave propagation in metals and plasmas.

Interference, Special theory of Relativity Uncertainty principle.

Linear Harmonic oscillator, Angular momentum, commutation relations, Ladder operators eigenvalues of I, and L Z, Parity operator Hydrogen atom problem, Pauli spin matrices.

Time-independent non-degenerate perturbation theory and its simple applications.

Identical particles, symmetric and anti-symmetric wave function.

Crystailline state of solids, unit cell, bravais lattice, reciprocal lattice, interatomic forces, vibrations of

monoatomic and diatomic chains, phonons.

Free electron theory of metals, electrons in periodic potential, Bloch waves, semiconductors, p-n , junction, diode, rectification, ripple factor, Transistor action and characteristics, C.E. amplifiers and its frequency response. Logic gates, Boolean algebra, Combination logic, Integrated Circuits. Solar Cell

18. ZOOLOGY

Nonchordates, Taxonomy and Evolution, Physiology and Biochemistry, Protochordates and Vertebrates

Special Topics

Sphenodon as living fossil, Biting mechanism of poisonous snake; snake venom and antivenom. Flight adaptations of birds, Aquatic mammals.

Animal Distribution and Ecology, Genetics and Cell Biology, Molecular Biology and Genetic Engineering, Economic Zoology and Environmental Biology, Development Biology and Ethology.

19. COMPUTER SCIENCE

PAPER-I

MATHEMATICS

Elementray Symbolic Logic : Sets-Algebra, cartesian product, Relation, Functions, Injective and Surjective MAPS; Inverse Functions.

Number System : Natural numbers, Integers, Integer modulo-N division algorithm, Enclidean Algorithm, Prime factorization.

Real-Number System : Complex Numbers, Real Sequence, Convergence of Infinite Series, Limit and Continuity of Functions of one Variable, Properties of continuous function in closed intervals. Differentiability and its application.

Differential Equations : Differential equations of first order, Linear differential equations with constant coefficients.

Functions of Several Variables : Limits, Continuity, Partial Derivatives, Differentiability, Gradient, Divergence, Curl, Line Surface and Volume Integrals.

Linear Algebra : Vector Spaces, Bases and Dimensions, Rank of Linear Transformations, Matrices, Matrix Representation of Linear Maps, Determinants, Rank of Matrices, Eigenvalues, Eigenvector, Cayley-Hamilton theorem, Diagonalisation of Matrices with distinct eigen values. Sequences and series of functions of a real variable, uniform coveregence Richan-integral of a Bounded function, convergence of Improper Integrals.

Statistics & Probability : Basic concepts and Bayes theorem.

PAPER-II

PHYSICS

Mechanics and Elementary Relativity theory : Motion of systems of particles, Linear and angular momentum, Rotational Motion, Moment of inertia.

Non-rigid bodies : Stress and strain, Elastic moduli, Generalised Hook's law.

Fluid Mechanics : Ideal and viscous fluids, Equation of continuity, Rotational and Irrotational flows, Bernoulli's Theorem, Poiseuill's Equation, Stoke's Law.

Special theory of Relativity : Gallilean Transformation, Postulates of Special Theory, Lorentz transformation, Relativistic Dynamics.

Thermal Physics : Zeroeth law of Thermodynamics, Concept of temperature, First law of Thermodynamics, Simple Applications, Reversibe and Irreversible Processes, Second law of thermodynamics, Carnot's cycle, Entropy, Temperature Entropy Equation, Thermodynamic potentials, Joule-Thomson effect, Kinetic theory of gases, Conduction and Radiation of heat.

Optics : Corpuscular and Wave Theory of Light, Interference, Diffraction, Fresnel's Theory, Fruanhoffer's Diffraction, Resolving Power of Prism, Polarisation, double Refraction, Production and Detection of elliptically and circularly polarised Light, Basic Ideas of stimulated Emission, Lasers.

Wave-Motion, Electrostatics, Magnetostatics: Oscillations-Simple Harmonic and Damped Oscillations, Forced Oscillations, Wave Motion in Non-Dispersive media, Wave Equation, Progressive Wave Solution, Acoustic Impedance, Energy Density, reflection and Transmission of Plane Waves, Coulomb's Law, Gauss's Law, Electric Dipole, Dielectrics, Ampere's Law, Biot-Severt's Law, Vector potential, Divergence and Curl of B, Magnetic Material and Magnetisation, Time Varying Fields, Displacement Current, Curl of H, Faraday's Law, Self and mutual inductance, Electromagnetic waves in free space, Maxwell's Equations.

Atomic & Nuclear Physics : Bohr-Sommerfield model, Characteristics of Continuous X-Rays, Space quantisation, Bohr Magneton, Larmor Precession, Diamagnetism, Paramagnetism, Ferromagnetism and Antiferromagnetism. Quantum Concept : Photoelectric effect, Compton effect, deBroglie waves, Heisenberg's uncertainty principle, One-Dimensional Schrodiner's wave equation. Nuclear Physics : Natural Radioactivity, Fission and fusion, Liquid Drop Model.

Electrical Circuits and Basic Semiconductor Electronics : Circuit parameters, Kirchhoff's laws, Norton's and Thevenin's theorems, Charging and discharging of condenser, Growth and decay of current in R-L circuits, Balance and sensitivity conditions for A-C bridge, Semiconductor materials, Diodes and Transistor, Measuring instruments, multimeters and CRO, Digital Electronics.

OR

PAPER-II

COMPUTER SCIENCE

Mathematical Logic : Mathematical systems, Statements and Notation, Propositions and connectives, Statement formulae and truth tables, Logic variables, Logic functions, Logic expressions, Equivalence classes of logic function, Complete sets of logic functions.

Logic Algebra : Boolean Algebra, Theorems of Boolean Algebra, Switching Algebra, Switching functions, and switching formulae, Binary number systems, Disjunctive and conjunctive canonical forms of expressing switching functions, Trasformation. Minimisation techniques, Minimisation using Boolean identities, Karnaugh map.

Logic Circuits : Logic gates, Analysis of Combinational circuits, MSI logic building blocks, Realization of logic circuits using SSI and MSI, Flip-flops, Analysis of sequential logic circuits, Counters and Registers.

Computer Fundamentals : Fundamental units of a digital computer, Stored programme concept, Data representation in computers, Arithmetic operations CPU architecture, Instruction format, Addressing modes, Instruction set of 8 bit processors. Concept of sequential and random storage, Basic memory cell and their organization, RAM, ROM, EPROM etc. Auxiliary storage devices, Magnetic and optical disc, I/O techniques, I/O devices-Key board, Monitor, Printer etc.

Software : Algorithms, Control Structres, Flowcharts, Pseudocode, Design of Algorithm, Tracing, Simple Algorithm, Language features of C, Programming in C, Data Structures-Arrays, Stack, Queues, Linked lists, Multilinked lists, Trees, Tree Traversal, Simple properties of Graph.

20. M.Sc. (APPLIED GEOLOGY)

(Candidate has to attempt any two papers from following)

PAPER-I

MATHEMATICS

Elementray Symbolic Logic : Sets-Algebra, cartesian product, Relation, Functions, Injective and Surjective MAPS; Inverse Functions.

Number System : Natural numbers, Integers, Integer modulo-N division algorithm, Enclidean Algorithm, Prime factorization.

Real-Number System : Complex Numbers, Real Sequence, Convergence of Infinite Series, Limit and Continuity of Functions of one Variable, Properties of continuous function in closed intervals. Differentiability and its application.

Differential Equations : Differential equations of first order, Linear differential equations with constant coefficients.

Functions of Several Variables : Limits, Continuity, Partial Derivatives, Differentiability, Gradient, Divergence, Curl, Line Surface and Volume Integrals.

Linear Algebra : Vector Spaces, Bases and Dimensions, Rank of Linear Transformations, Matrices, Matrix Representation of Linear Maps, Determinants, Rank of Matrices, Eigenvalues, Eigenvector, Cayley-Hamilton theorem, Diagonalisation of Matrices with distinct eigen values. Sequences and series of functions of a real variable, uniform coveregence Richan-integral of a Bounded function, convergence of Improper Integrals.

Statistics & Probability : Basic concepts and Bayes theorem.

PAPER-II

PHYSICS

Mechanics and Elementary Relativity theory : Motion of systems of particles, Linear and angular momentum, Rotational Motion, Moment of inertia.

Non-rigid bodies : Stress and strain, Elastic moduli, Generalised Hook's law.

Fluid Mechanics : Ideal and viscous fluids, Equation of continuity, Rotational and Irrotational flows, Bernoulli's Theorem, Poiseuill's Equation, Stoke's Law.

Special theory of Relativity : Gallilean Transformation, Postulates of Special Theory, Lorentz transformation, Relativistic Dynamics.

Thermal Physics : Zeroeth law of Thermodynamics, Concept of temperature, First law of Thermodynamics, Simple Applications, Reversibe and Irreversible Processes, Second law of thermodynamics, Carnot's cycle, Entropy, Temperature Entropy Equation, Thermodynamic potentials, Joule-Thomson effect, Kinetic theory of gases, Conduction and Radiation of heat.

Optics : Corpuscular and Wave Theory of Light, Interference, Diffraction, Fresnel's Theory, Fruanhoffer's Diffraction, Resolving Power of Prism, Polarization, double Refraction, Production and Detection of elliptically and circularly polarized Light, Basic Ideas of stimulated Emission, Lasers.

Wave-Motion, Electrostatics, Magneto statics : Oscillations-Simple Harmonic and Damped Oscillations, Forced Oscillations, Wave Motion in Non-Dispersive media, Wave Equation, Progressive Wave Solution, Acoustic Impedance, Energy Density, reflection and Transmission of Plane Waves, Coulomb's Law, Gauss's Law, Electric Dipole, Dielectrics, Ampere's Law, Biot-Severt's Law, Vector potential, Divergence and Curl of B, Magnetic Material and Magnetization, Time Varying Fields, Displacement Current, Curl of H, Faraday's Law, Self and mutual inductance, Electromagnetic waves in free space, Maxwell's Equations.

Atomic & Nuclear Physics : Bohr-Sommerfield model, Characteristics of Continuous X-Rays, Space quantisation, Bohr Magneton, Larmor Precession, Diamagnetism, Paramagnetism, Ferromagnetism and Antiferromagnetism. Quantum Concept : Photoelectric effect, Compton effect, deBroglie waves, Heisenberg's uncertainty principle, One-Dimensional Schrodiner's wave equation. Nuclear Physics : Natural Radioactivity, Fission and fusion, Liquid Drop Model.

Electrical Circuits and Basic Semiconductor Electronics : Circuit parameters, Kirchhoff's laws, Norton's and Thevenin's theorems, Charging and discharging of condenser, Growth and decay of current in R-L circuits, Balance and sensitivity conditions for A-C bridge, Semiconductor materials, Diodes and Transistor, Measuring instruments, multimeters and CRO, Digital Electronics.

Geology

The Planet Earth: Origin of the solar system and the Earth; Geosphere and the composition of the earth; Shape and size of he earth; Earth –moon system; Formation of continents and oceans; Dating rocks and age of earth; Energy in the earth systems; Volcanism and volcanic landforms; Interior of earth; Earthquakes; Earth's magnetism and gravity, Isostasy; Elements of Plate tectonics; Orogenic cycles.

Geomorphology: Weathering and erosion; transportation and deposition due to wind, ice, river, sea, and resulting landforms, Structurally controlled landforms.

Structural Geology: Concept of stratum; contour; Outcrop patterns; Maps and cross Sections; Dip and Strike; Classification and origin of folds, faults, joints, foliation and lineation, unconformities; Shear zones.

Palaeontology: Major steps in the evolution of life forms; Fossils; their modes of preservation and utility; Morphological characters, major evolutionary trends and ages of important groups of animals-Brachiopoda, Mollusca, Trilobita, Echidnodermata; Gondwana plant fossils; Elementary idea of vertebrate fossils in India.

Stratigraphy: Principles of stratigraphy; Litho-, chrono- and biostratigraphic classification; distribution and classification of the stratigraphic horizons of India from Achaean to Recent.

Mineralogy: Symmetry and forms in common crystals classes; Physical properties of minerals; Isomorphism and Polymorphism, Classification of minerals; Structure of silicates; Mineralogy of common rock-forming minerals; Modes of occurrence of minerals in rocks. Transmitted polarized light microscopy and optical properties of uniaxial and biaxial minerals.

Petrology: definition and classification of rocks; igneous rocks-forms of igneous bodies; Crystallization of magma; classification, association and genesis of igneous rocks; sedimentary rocks-classification, texture and structure; size and shape of sedimentary bodies. Metamorphic rocks-classification, facies, texture and properties.

Economic Geology: Properties of common economic minerals; General properties of formation of mineral deposits; physical character; Mode of occurrence and distribution in India both of metallic and non-metallic deposits; Coal and petroleum Occurrences in India.

Applied Geology: Ground water Hydrology; Mineral exploration, elements of Mining Geology and Environment Geology; Principles of Engineering Geology.

M.A. & M.Sc. (Common to both streams)

Sl No.	**Subject Name**
21.	ANTHROPOLOGY

22. DEFENCE STUDIES
23. GEOGRAPHY
24. MATHEMATICS
25. PSYCHOLOGY
26. STATISTICS

21. ANTHROPOLOGY

Section I

SOCIO- CULTURAL ANTHROPOLOGY

Marriage, Kinship, Political and Economic Anthropology, Religion, Theories of Culture, Diffusion

Note : Post Graduation in these subjects are available in Art & Science both streams. In the test, paper of these subjects will be available in the test booklets of M.A. & M.Sc. both.

Admission of a candidate to M.A. or M.Sc. will depend on the condition that candidate has passed graduation from

Art or Science stream as per rules describe in Section II (Admission rule & procedure) of this brochure.

Culture and Personality school

Section II

Physical ANTHROPOLOGY

Section III : INDIAN ANTHROPOLOGY

Section IV : PREHISTORY

22. DEFENCE & STRATEGIC STUDIES

Art of Warfare in Indian, Contemporary Study of War and Peace, Indian Military History, World Military History, Strategic Thought, National Security, Science, Technology and National Security, Current Development related to India's Defence and Security.

23. GEOGRAPHY

Lithosphere, Atmosphere, Hydrosphere & Biosphere, Human Geography, Economic Geography, Regional Geography, Geography of India, Practicals

24. MATHEMATICS

Straight Line and planes using vector techniques, Spheres, cones. Cylinders. Central Conchoids, Generating lines. Conies in Polar coordinates.

Sets, Relation and Maps. Real number system, Real Sequences, Limits of sequences. Convergence of Infinite series of positive terms. Limits and continuity of functions of one variable, Differentiability and its applications. Differential Equations of first order, Applications, Equations of higher degree, Linear differential equations of higher order, Variation of parameters, Linear systems of first order.

Application of Linear equations, Statements of Existence theorems.

Vector Calculus, Scalar and Vector fields, Gradient, Divergence and Curl, Line integral. Double integrals. Green's theorem, Surface integrals & triple integrals, Gauss' and Stokes' theorems. Convergence of general series, Absolute and Conditional Convergence, Riemann integration, fundamental theorem of Calculus. Function of several variables, Limits and continuity, Partial and Directional Derivatives.

Vector spaces, Subspaces, Linear independence, Linear span, Bases and Dimension. Matrices, Rank, Systems of Linear Equations, Gauss elimination. Echelon form, Determinates, Cramer's Rule, Eigen values, Eigenvectors, Cayley-Hamilton Theorem, Diagonalization, Inner product spaces, Quadratic Forms.

Differentiability of functions of several variables. Mean value theorem and Taylor's theorem for real valued functions. Jacobeans. Inverse and Implicit function theorem. Convergence of sequence and series of functions. Uniform convergence. Convergence of Improper Integrals.

Mechanics; Virtural work, Catenary, Motion in a plain. Constrained Motion. Central forces.

Force in three dimensions. Rigid dynamics, Moments and products of inertia, DAlembert's principle.

C. Hydrodynamics; Lagrangian and Eulerian approaches, Euler's equation of Motion, Fluid Motion in two dimensions. Groups, Rings and Fields. Linear congruence, Quadratic residues, Arithmetic functions.

Numerical Techniques for roots of general equations, Interpolation, Numerical Differentiation and integration, Numerical solution of ordinary Differential Equations of first and second order.

Numerical Linear Algebra: Matrix Factoring, Iterative methods for systems for Linear, equations. Estimation of eigenvalues and eigenvectors, Least square curve fitting.

25. PSYCHOLOGY

Section I : Basic Psychology process

Section II : PSYCHOLOGICAL STATISTICS

Section III : PSYCHOPATHOLOGY

Section IV : PSYCHOLOGY AND SOCIAL PROCESSES

Section V : DEVELOPMENT PSYCHOLOGY

Section VI : PERSONALITY RESEARCH AND MEASUREMENT

Section VII A : CLINICAL PSYCHOLOGY IN SCHOOL SETTING

OR

SECTION VII B : ORGANISATIONAL BEHAVIOUR

26. STATISTICS

1. Probability Theory and Distribution Theory
2. Estimation Theory and Testing of Hypothesis
3. Statistical Theory and Applied Statistical Analysis
4. Optimization

27. M.Com. (Master of Commerce)

Statistics, Management, Company Law, Accountancy and Cost Accounting, Income Tar, Auditing, Indian Economy, Economics, Banking, Business Organization, Business Law, Insurance.

SPECIAL SUBJECTS

Sl No. Subject Name

28. BIO-CHEMISTRY
29. AGRICULTURAL BOT / CHE / Z00
30. MASS COMMUNICATION

28. BIOCHEMISTRY

Biomolecules, Enzymes, Intermediary Metabolism, Vitamins Hormones, Physiology, Genetics, Cell biology and Molecular Biology, Molecular basis of gene regulation, Nutrition, Microbiology, Physical Chemistry.

29. AGRICULTURAL BOTANY

Historical, symptomology, properties and nature of plant viruses, modes of transmission of plant viruses. General principle of control of viral diseases in plants. A knowledge of the common viral diseases of potato tobacco, Hibiscus, cucurbits, beans and banana. Historical, broad outlines of morphology, reproduction, nomenclature and classification of plant pathogenic bacteria. History of Mycology, Taxonomy and nomenclature of fungi. Origin and phylogeny of fungi. Different, systems of classification and their basis. Structure and life history of the chief representatives of fungi. History of plant pathology. Dissemination of diseases, modes of infection symptomology, physiology of parasitism, mechanism of disease resistance, fungicides and their action.

Cell structure and function, cell wall, nucleus, mitochondria, golgi apparatus, chloroplasts and other cell organelles, their structure and function. Cell division : mitosis and meiosis. Polyploidy: Nature and classification of Polyploidy. Heridity and environment, laws of heredity; Linkage, crossing over and mapping of chromosomes. The nature of gene and factors affecting mutation. History of

plant breeding, its present status and scope. Mode of reproduction in crop plants. Heterosis and its application.

Regional soils of India in relation to crops and their production. Secondary effects on micro flora. Physical nature of soils and water relation of soils. Concept of water requirement of crops and the critical period of water requirement of plants and its significance in crop production. Formation of usar soils and their measurement. Control of alkalinity and salinity. Physiology of flowering, photoperiodism, verbalization and their impact on crop production. Seed formation, longevity and multiplication. Physiology and biochemistry of herbicides. Physiology of propagation. Physiology of fertilization, fruit growth and ripening. Mineral nutrition, uptake and translocation of solutes. Mutually beneficial and toxic influences of plants. Physiological role of Some major and minor elements such as N, R K, Ca, Mg, B, Mo, Mn, Zn.

A study of the botany of important weeds associated with the crop plants of U.P Methods of preventing introduction and spread of weeds. Principles and procedures of weed control Growth, inhibiting, and promoting chemicals and their composition. Soil microorganisms and their role in production. Principles, and practices of dry farming, special problems in dry farming mixed cropping and strip cropping in agriculture in India. Agronomic practices in relation to soil acidity and alkalnity.

Soil nitrogen losses and its restoration, Phosphorous deficiency and soil fertility. Fixation of nutrients in soil. Soil potassium in relation to soil fertility and plants growth and development. Plant production problems and methods. C/N ratio as a function of growth and development. The problems of non-irrigated soils. Tillage and its influence on plant growth. Horticulture-importance and present position. Origin, history, breeding and production technology of important fruits such as Mango, Banana. Citrus, Guava. Papaya, Grape. Pineapple, Litchi, Pomegranate, Ber, Apple, Pear and Walnut with special reference to climate, soil, propagation, cultivars, nutrition, irrigation and other orchard management practices. History of gardening of India. Styles of gardening, their principles and practices with special reference to Mughal, Japanese and English gardens. Frequency distribution, mean, median and mode. Standard deviation. Test of significance : t, F and chi-square tests. Experimental design basic principles, completely randomized. Randomized block, Latin square and Split-plot designs and their analysis.

AGRICULTURAL CHEMISTRY AND SOIL SCIENCE

Theory of acid and bases, pH and its determination, buffers, oxidation, reduction, catalytic reaction, colloids & their properties, Humus and clays.

Carbohydrates nomenclature, classification, proteins-classification, physical & chemical properties. Liquids classification and properties.

Soil texture & structure. Soil moisture & its movement. Soil chemistry : weathering of rocks & minerals, profile development. Soil forming processes, exchangeable properties of soil, organic matter-properties and its fractions. Reclamation of Soils. Quality of irrigation water. Soil fertility-macro & micro nutrients.

Manures & fertilizers-classification, mode of action & utilization. Uptake of nutrients. Pesticides & residual toxicity.

Enzymes classification & their mechanism of action.

Metabolism of carbohydrates, lipids & proteins.

N-fixation, Phytohormones & vitamins.

AGRICULTURAL ZOOLOGY & ENTOMOLOGY

1. General introduction to animal kingdom and various phyla with special reference to agricultural and economic importance. Agricultural importance of phytonematodes. snails, slugs, earthworms, crabs, birds, and mammals, their distribution, habit and life cycle.
2. Identification of poisonous snakes of India. Symptoms of snake bite and its antidotes. Life history and control of animal vectors of human diseases and important parasites of man animals.
3. Local fishes of ecdnomic importance, planning and implementation of fish farming, knowledge of crustacean and molluscan fisheries. Rat damage to crops and plantations. Methods of its control.
4. Classification of Phylum Arthropoda upto classes: general characters and examples. Position of insects in animal kingdom. Study of characters of insect orders of economic importance. Life history, rearing methods of some useful insects viz. honeybee, silk worm and lac insects.
5. Insect morphology integument and its structure, regions, sclerites. segmentation of head : Its appendages, structure and function : modification of antennae and mouth parts of insects. Study of insect thorax and its appendages including genitalia.
6. Anatomy of grasshopper, digestive, respiratory, excretory, circulatory, reproductive, nervous system and sense organs. Post embryonic development of insect, ecdysis, instars. metamorphosis, types of larvae and pupae. Pest management: principle of integrated Pest management, concept, and procedure. Physical, mechanical, chemical, biological, and legislative control of insects. Insecticide poisoning and its antidotes. Concept and importance of wild life conservation in relation to ecology and environment.

30. MASS COMMUNICATION

1. General awareness including constitutional matters, current affairs, public debates on matter of polity, economy, science & technology. Awareness of International Development and their impact of Indian society.
2. Exposure to issue and debates covered by print media, television news channels and radio. General understanding of Indian Art, Culture, National movements and Cinema.

SPECIAL COURSES

Sl. No. Subject Name

31. M.F.A.
32. M.A. in Theatre & Film
33. Master in Development Studies (MDS)
34. M.Sc. in Cognitive Science
35. M.Sc. in Material Science
36. M.Tech in Earth System Sciences (ESS)
37. M.Sc. Environmental Science
38. M.Sc. in Textile and Apparel Designing
39. M.Sc. in Bioinformatics
40. Master of Physical Education (M.P.ED.)

31. Master of Fine Arts (M.F.A.)

Theory : 100 Marks

(Through Admission Test conducted by the University of Allahabad)

Syllabus : Aesthetics & Art Appreciation, History of Indian and Western Art & Current trends in Art Scenario.

Practical : 100 Marks

Life Drawing, Time : 180 minutes in Charcoal / Pastal / Water colour.
(The Practical Test will be conducted by the Department. For Practical Test half imperial size paper will be given. The candidates are advised to contact the Head, Visual Arts Department for Practical Test).

Interview : 50 Marks

Tution & other Fee :

The slab of Tution and other fee for one academic year - ₹ 4000

The slab of Studio / Locker and other fee for one academic year - ₹ 10000

32. M.A. Theatre & Film

No. of Seats : 10

Admission Procedure : Written exam and interview

Eligibility criteria : Graduate (any stream)

Course structure : Semester system (2 years – four semesters)

Syllabus for Admission test : No prescribed syllabus. Questions are based on general awareness about film and theatre.

33. Master in Development Studies (M.D.S.)

Number of Seats: 20 (Twenty).

Eligibility criteria for admission: Graduate in any discipline with a minimum 50% at high school, intermediate and graduate level from a recognized institution /University.

Admission Procedure : Admission to this course would be made on the basis of PGAT by University of Allahabad. Only those securing more than 55% of marks for General & OBC (50% for SC/ST) in the entrance test would be considered for admission.

Section A:

The first section will consist of 15 Short questions of 15 marks and will cover the following areas:

A. Theories & perspective of development and globalisation
B. International politics and relations
C. Global economic order
D. Corporate sector and Globalisation
E. Globalisation and tribal & rural societies
F. Science and Technology in Global era
G. Mass Media & Information & Communication Technology (ICT)
H. Sustainable development and Environmental issues
I. Basic Computer Skills

Section B:

Language Skills & Comprehension (Descriptive)

Section B will consist of Descriptive answer type questions (Approx. 500 words) totaling Seventy Five (75) marks in the following areas :

A. Précis Writing
B. Idioms & phrases, Foreign words and phrases
C. Opinion writing

Duration of the Course: Four Semesters, each of six months duration.

34. M.Sc. in Cognitive Science

No. of Seats : 23

Admission Procedure : Written Test (Objective + Descriptive) followed by an Interview

Syllabus and Pattern

Duration : 90 minutes

The Test will consist of two Sections. The first Section will consist of objective questions (10 each) and will cover the following areas:

A. English Comprehension
B. General Reasoning
C. Numerical Ability

The second Section will consist of descriptive long answer type questions (7 out of 12) in the areas of Cognitive Psychology, Computer Science, Linguistics, and Neuroscience.

Eligibility Criteria: Students who have completed a Bachelors degree in Cognitive Science or related disciplines including Psychology, Neuroscience, Biosciences, Mathematics, Physics, Engineering, Medicine, etc. are eligible to apply for admission to the Master program.

Students should have at least 55% (for General) at the Undergraduate level (50% for OBC/SC/ST) for appearing in the entrance exam.

A written entrance test followed by interview is conducted for the purpose of selection.

The interview and the written test assess the student's capability for carrying out independent research and a flair for studying cognition. Admission is based on the student's performance in the written test, interview and the bachelor degree.

Syllabus for Descriptive Questions

Cognitive Psychology: Perceptual processes, object recognition, attention, working memory, long-term memory, different types of long-term memory, mental imagery, language comprehension and production, language development, problem solving, decision making and cognitive development.

Neuroscience: Structure of neurons, glial cells, action potential, synapse, synaptic transmission, neuro-transmitters, anatomical organization of the nervous system, sensory systems, neural basis of learning and memory.

Suggested Readings :

Thagard, P. Mind: An introduction to cognitive science, PHI.

Eysenck, K. (2002). Cognitive Psychology: A student's handbook. Sussex: Psychology Press.

Solso, R. L., Maclin, K. M., & Maclin, O. H. (2005). Cognitive Psychology. NY: Pearson.

Longstaff, A. (2002). Neuroscience. New Delhi: Viva Books Private Limited.

George, Y. The Study of Language. New Delhi. Cambridge University Press India.

Computing and Programming: Values and their representation, operations on values, data-types, control statements, data structures, functions, pointers, Basic algorithms.

Suggested Reading(s) : Yashavant P. Kanetkar. Let Us C., Infinity Science Press; 8 edition (1 Mar 2008)

M. Sc. - Material Science

Eligibility Criteria: Candidate should be B.Sc. with Physics or Chemistry as one subject in III year. Provided he/she has Mathematics as one subject at least upto II year.

Course structure: Programme shall be of the duration of two academic years and spread into four semesters. Each semester will correspond to 15-17 week duration. Course will consist of theory followed by laboratory practice, spread over all the four semesters and a major project work in 4th semester (leading to publication in appropriate journals). Names of the courses are appended.

Admission Procedure: Admission Test. Questions will cover 20% from Mathematic (Compulsory-Section I) and 80% from either of the Physics (Optional – Section II) and Chemistry (Optional-Section III). Some questions may be objective (with multiple correct answers) and rest short answers.

Syllabus for the admission Test: Broad Topics Appended. It will cover average topics taught at UG level in Indian Universities.

About the Course: Materials Science is a multidisciplinary subject area focusing on preparation and characterization of materials for hi-tech applications e.g. Memory Devices, Sensors, Displays, Light Energy harvesting, and other electronic applications. Forth coming generation belongs to multifunctional artificial intelligent materials. Materials Science builds on combined elements of Physics, Chemistry and Electronics. It helps students to acquire theoretical and experimental skills to understand the material properties and its applications.

Such courses are highly relevant to present days high tech society needs.

During the course, graduates will receive practical experience in advanced technology material synthesis and their characterization with the proper background of Physics and Chemistry. Various courses help to formulate, design and make use of the materials for various classical to advance products. Material Science degree will provide the graduates appropriate background to find employment mainly in the exciting field of electronic materials including nano materials.

Graduates are mainly employed in manufacturing industries especially in electronic and other allied products which open huge employability in India and abroad. They may go for further advanced study like M. Tech./M. Phil. and Ph. D. to gain highly specialized training. Scientific and technical research positions in various national and international research laboratories and teaching in public institutions are further areas of employability.

Section – I (Common for all categories)

Mathematics:

- Functions, Differentition, Application of Derivatives, Definite and Indefinite Integrals, Limit and Continuity, Differential equations (first order and second order), Curve of simple functions, Scalar and Vector products. Reciprocal vectors. Vector Differentiation, Gradient, Divergence and curl. Vector integration. Theorems of Gauss, Stoke's and problems based on these.

Section – II (Elective)

Physics:

- Thermodynamics**,** Kinetic Theory of Gases, Conduction of Heat and Radiation.
- Motion under central forces, Mechanics of nonrigid bodies, Elastic properties,Fluid Mechanics.
- Electrical Circuits: AC, DC and transient behaviour.
- Semiconductor Electronics including photonics and digital electronics
- One dimensional motion in non dispersive media, Ultrasonics.
- Electrostatics in free space and in dielectric media, Electric Current, Magnetostatics, Time varying Fields, Electromagnetic waves in free waves, Physical optics.
- Atomic Physics, X-ray, Vibrational and Rotational spectroscopies, UV-visible spectroscopies.
- Need of quantum mechanics, observables and operators, Schrödinger equation and its simple applications upto hydrogen like atoms.
- Crystal Structure, Reciprocal Lattice, Interatomic forces and classification of solids, Free electron theory and band gap of solids, Electrical and Magnetic properties of Materials.

OR

Chemistry:

- Quantum Chemistry: Observables and Operators, Schrödinger equation and its simple applications upto hydrogen like atoms.
- Chemical Bonding, Valence bond theory, Molecular orbital theory.
- Properties of s and p blocks, Transition and inner transition elements.
- Coordination compounds, Complex Formation.
- Fundamentals of organic chemistry, Hybridization, Inductive, Electrometric, Resonance and hyperconjugative effects. Huckel's rule, Stereo Chemistry of carbon compounds, isomerism, elements of symmetry, R,S-System of nomenclature, Methods for determination of reaction mechanism, Chemistry of Functional groups, Inductive, electromeric, conjugative effects and resonance.

- UV-visible, Vibrational and Rotational spectroscopies, Nuclear Magnetic Resonance Spectroscopy.
- Chemical Kinetics: zero, first, second and third order reactions.
- Chemical Thermodynamics and Chemical Equilibria.
- Electrochemistry, reversible electrodes, Electrode reactions, Nernst equation, determination of cell E.M.F, Concentration Cells, Acid-Base concepts.
- Photochemistry: Lambert-Beer law, Jablonski diagram.
- Gaseous state, Isotherm, the law of corresponding states, Maxwell's distribution, Liquid State.

  Solid State Chemistry, space lattice, unit cell, Symmetry elements, Lattice planes and Miller indices, X-ray diffraction.

36. M. Tech. In Earth System Sciences (ESS)

Syllabus for Entrance Examination

Statistical Distributions, Probability, Curve fitting, Correlation, Regression, Mean, Variance, Analysis of variance, Significance tests, Fundamentals of computers and programming, Knowledge of different operating systems, Numerical Methods, Ordinary and Partial Differential Equations, Basics of Atmosphere and Ocean, Weather and Climate, Composition and structure of atmosphere, Thermodynamics of the atmosphere, Laws of thermo-dynamics, Heat budget, Properties of seawater, Temperature, Salinity, Density, Conductivity, Indian Monsoon, Ecological Principles, Molecules and their interaction relevant to Biology.

Eligibility for Admission and Duration of Course:

(a) For admission to the integrated M. Tech. programme, the applicant must have a master's degree in Physical Sciences/Mathematical Sciences/Chemical Sciences/ Life Sciences/Geosciences/any cognate discipline or a B. Tech./B.E. with marks/CPI not below the 55% marks/ 5.5 (on a 10 point scale) (50% for SC/ST candidates) for appearing in the entrance exam.

(b) Preference shall be given to the applicants who have a valid GATE score or have cleared UGC-CSIR (JRF) NET.

(C) Minimum duration of M. Tech. programme is 4 semesters.

(d) Reservation of seats for various reserved categories shall be made as per the existing guidelines of UGC/ University of Allahabad.

(e) Candidates working in a research and development organization on permanent basis in the field of Earth System/Cognate disciplines, may be sponsored by his/ her employer for direct admission to the Integrated M. Tech. programme. The sponsoring organization must specifically undertake to provide full salary to the candidate and to relieve him/her to pursue the programme for its full duration.

Admission Test

1. 15 Short type questions to be answered in 50 words
   (15 x 15 = 225 marks).
2. 3 Medium question to be answered in 150 words
   (25 x 3 = 75 marks) Total = 300 Marks

37. M.Sc. in Environmental Sciences

Admission Procedure:

There shall be an intake of a total of **31 students** in the First semester of the course. Out of the total seats, **60% (19 seats)** shall be assigned to the NRI/ NRI sponsors/ Industry sponsored/ Paid seat categories. Candidate belonging to these categories shall be admitted in

order of merit prepared on the basis of the aggregates marks (excluding marks obtained in the practical examination) scored by the candidate at the Bachelor's degree examination. They are not to appear in the Entrance Test.

Admission to the remaining seats, **40% (12 seats)** shall be made by Entrance Test in order of merit prepared on the basis of a written Entrance Test.

Reservation will be made as per Government rules.

Eligibility Criteria:

a. A candidate who has passed/ appeared in Bachelor's degree (10 + 2 + 3) examination with science subject from a recognized University, and has secured not less than 50% marks on the aggregate, is eligible to apply for Admission to this course.

   Provided that requirement of a minimum of 50% marks is not applicable in case of SC/ST candidates.

b. A candidate who has passed or appeared at the above examination with Science group is eligible to apply for the Admission in M.Sc. Environmental Sciences.

Course Structure: 4 semesters (Two years).

Syllabus for Admission Test :

The written Test for admission to the Master's Programme in Environmental Sciences is designed to assess interest of the candidate and his/ her basic knowledge in the fields of Botany, Zoology, Statistics, Chemistry and Environmental Sciences.

There will be a 1.30 hours written test for 300 marks. The test will consist of questions in the areas of Botany, Zoology, Chemistry, Statistics, Physics and Environmental Sciences.

Admission Test

1. 15 Short type questions to be answered in 50 words
   (15 x 15 = 225 marks).
2. 3 Medium question to be answered in 150 words
   (25 x 3 = 75 marks) Total = 300 Marks

38. M.Sc. Textile and Apparel Designing

Design: Types of Design, Principles of Design, Element of Design-Line Texture, Colour

Fashion: Fashion cycle, theories of Fashion

Technique in pattern making: Drafting, draping, paper pattern

Fitting: associated problems

History & scope of Apparel Design in India.

Terminology of fabric cutting & sewing.

Drafting's of – frock, Romper, Women's garments, Men's garments.

Properties of textile fibers

Textiles chemistry – Natural fibers, man made fibers, yarn construction, Fabric finishes, Dyes types.

Traditional textile of India – Chikankari, Zardosi, Kanthas of Bengal, Kahmiri kasheeda, Muslins of Dhaka, Amru and Himru of Hyderabad, Kanchivarams, Chanderi's, Phulkari, Patola.

Removal of stain – Cotton, Silk, and synthetic fabric soap manufacturing.

Laundry & dry cleaning – Soap making, types of bleeches.

Printing methods – Resist, block, screen printing.

39. M.Sc. Bioinformatics

Admission Procedure:

Admission to this course will be done on the basis of entrance Examination that shall comprise a Written Test (150 Marks) and an Interview (50 Marks).

Candidates will be selected solely on the basis of their performance in the written test.

The order of Merit shall be determined on the basis of computed total of the candidate. There shall be separate Merit lists for candidates belonging to general category and for those of reserved categories, as per reservation rules of the Central University.

Eligibility Criterion:

The Course for M.Sc. in Bioinformatics will be open those student who have passed the B.Sc. Examination of this University or any other University recognized by this University with the following combinations with 55% of the marks.

(a) Zoology, Botany, Chemistry
(b) Zoology, Chemistry, Biochemistry
(c) Botany, Chemistry, Biochemistry
(d) Mathematics, Physics, Chemistry
(e) Mathematics, Physics, Computer Science
(f) Mathematics, Physics, Statistics

Those who have passed B.Sc. with Molecular Biology, Cell Biology, Microbiology, Biotechnology, Biophysics, Biochemistry, Structural Biology, as one of the subjects can also apply.

Syllabus for Admission Test:

The syllabus for the admission test will be of graduation level for above mentioned subjects/combinations.

40. MASTER OF PHYSICAL EDUCATION (M.P.Ed.)

Four-Semester 2 Years Post Graduate Degree Course

COURSE INFORMATION:

The Course is of two years duration. The details of the subjects and Sport Specializations to be taught in Four Semesters are given below:

Syllabus for M.P.Ed. Written Exam

Entrance Test

1. Introduction, Foundation and Management of Physical Education

1.1 Aims and objectives of Education and Physical Education and Contribution of Physical Education.
1.2 Biological, Psychological and Sociological Principles and their Application in Physical Education.
1.3 Different Schools of Philosophy and their relevance to Physical Education.
1.4 Meaning, Phases, Nature and Importance of Management.
1.5 Location, Preparation, Layout and Maintenance of Play Fields Construction, Care and Maintenance of Gymnasium and Swimming Pool.
1.6 Equipments in Physical Education Criteria of selection, procedure of purchase, care and maintenance of equipments.
1.7 Intramural and Extramural Programmes.
1.8 Budget for Physical Education-Budget making and accounting.

2. Health Education

2.1 Definition of Health and Description of its components
2.2 Definition, Scope and Principles of Health Education
2.3 Health Problems in India.
2.4 School Health Programme
2.5 Nutrition, Assessment of Nutrition, Classification of Food, Balance Diet

3. Anatomy, Physiology and Physiology of Exercise

3.1 Essential properties of Living Matter
3.2 Cell, Tissues, Organs and Systems-Structure and Function

3.3 Study of following systems and processes with a view to understand the effect of exercise on Different systems of the Body

3.3.1 Cardio-Vascular System

3.3.2 Respiratory System

3.3.3 Nervous System

3.3.4 Metabolism and Temperature Regulation

3.3.5 Sensory System

4. Educational Methods and Educational Technology

4.1 Teaching Technique in Education

4.2 Principles of Teaching, Commands and Class Management

4.3 Lesson Planning-Physical Education and Coaching Lessons

4.4 Tournaments-Knockout, League, Combination and Challenge types

4.5 Audio-Visual aids-values, criteria for selection and suggestion for use

4.6 Presentation Techniques in Physical Education.

4.7 Micro Teaching, Simulation Teaching.

4.8 Definition of Components of an Instruction System, Advantages of System Approach

5. Educational Psychology

5.1 Growth and Development, types of learning, principles of learning, Learning use

5.2 Factors of learning and theories of learning

5.3 Individual Differences

5.4 Personality (Meaning & Nature)

5.5 Memory & Types of Memory.

6. Kinesiology and Corrective Physical Education

6.1 Types of Joints & Muscles.

6.2 Major Terminologies of Fundamental Movements.

6.3 Location and Action of Major Muscles.

6.4 Motor Unit and all and Non-law.

6.5 Reciprocal Innervations.

6.6 Equilibrium and Friction.

6.7 Prevention of Injuries

6.8 Massage

6.9 Postural Deformities

6.10 Therapeutic Exercises

6.11 Rehabilitation of Sports Injuries.

7. Tests & Measurements

7.1 Tests, Measurements, Evaluation, statistics, Their Meaning?

7.2 Measures of Central Tendency, Measures of Variability.

7.3 Percentile and Correlation

7.4 Criteria of Test Selection

7.5 Motor Fitness Tests, Skill Tests of different Games & Sports

8. Adapted Physical Education

8.1 Types of Disability, their causes and functional limitations.

8.2 Behavioural problems associated with disability.

8.3 Principles for adapted Physical Education Programme.

8.4 Rehabilitation of various types of disability.

8.5 Functional & occupational rehabilitation.

8.6 Psychological Rehabilitation.

9. Sports Training

9.1 Meaning, Definition and Principles of Sports Training.

9.2 Definitions, types and factors of training load.

9.3 Meaning and Classification of speed, strength and endurance.

9.4 Training method of speed, strength and endurance.

9.5 Definition and method of teaching training.

9.6 Meaning, types & importance of periodization.

10. Curriculum Design

10. 1 Professional courses in sports and Physical Education in India.

10.2 Professional Ethics

10.3 Qualities and Qualifications of Physical Education Personals.

10.4 Principles of Curriculum Planning.

10.5 Course content for academic and professional courses.

10.6 Construction of class and school Physical Education time table.

Admission Test

1. 14 Short type questions to be answered in 50 words
(14 x 5 = 70 marks).
2. 3 Medium question to be answered in 150 words (3 x 10 = 30 marks)
Total = 100 Marks