DAYALBAGH EDUCATIONAL INSTITUTE
(Deemed University)

SYLLABUS FOR
WRITTEN ADMISSION TEST

2011-2012

(This cancels all previous issues)

DAYALBAGH, AGRA – 282 110

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Cost by Express Parcel Post/ Registered Parcel Post (against Bank Draft)	**Rs. 50/-**

CONTENTS

STRUCTURE OF WRITTEN OBJECTIVE TEST

- Each question will require about 60 seconds to answer.
- **Duration of Test**: For B.Sc. (Engineering), PGDJMC and PGDTDP: Three hours.
- For all other courses: Two hours and No. of Questions: 120.
- Level of questions for B.A., B.Sc.(Home Science), B.A. (Social Science), B.Com., B.Sc. (Engineering), B.Sc., B.B.M., courses will be of Intermediate examination. However, (i) Mathematics paper for entrance test of B.Com. will be of High School level, for those students who have not taken Intermediate Level Mathematics in their Intermediate Examination and (ii) General Sciene paper for entrance test of B.Sc. (Home Science) will be of High School level.
- Level of questions for B.Ed., M.B.A. (Business Management), M.Tech., PGDCSA, PGDIM, PGDBE, and PGDTDP courses will be of Graduate (10+2+3) examination and for M.Ed. course it will be of B.Ed. examination.

SUBJECT COMBINATION FOR DIFFERENT COURSES

(1) B.A./B.A (Social Science): Besides one compulsory paper on General Knowledge and Current Affairs, the test shall have ten subjects, all having equal marks, on Drawing & Painting, Economics, English, Hindi, Home Science, Music, Political Science (Civics), Psychology, Sanskrit and Sociology of the standard of Intermediate examination. Out of the ten subjects, candidates shall attempt three subjects depending on the subjects they are likely to offer as major and faculty half courses in accordance with grouping as mentioned in the Prospectus.

(2) B.B.M.: The test paper shall have following four subjects all compulsory and of 15 marks each: (i) English Language, Expression and Comprehension, (ii) General Knowledge and Current Affairs, (iii) Logic & Reasoning, and (iv) Anyone subject out of Civics, Economics, Hindi, Home Science, Psychology, Sanskrit, Sociology, Book Keeping and Accountancy, Business Organisation, Banking, Commercial Mathematics, Botany, Chemistry, Mathematics, Physics and Zoology.

(3) B.Com.: The test paper shall have four subjects, all compulsory and all having equal marks: (i) Book Keeping and Accountancy, (ii) Business Organisation, (iii) Banking/Commercial Mathematics/High School level Mathematics and (iv) General Knowledge and Current Affairs.

(4) B.Sc. (Home Science): The student shall answer questions in the following subjects depending on stream from which they have passed the Intermediate examination as under:

Arts students (with Home Science)	1. General knowledge 2. English / Hindi / Sanskrit 3. Home Science 4. General Science
Science Students11	1. General Knowledge 2. English / Hindi / Sanskrit 3. Biology / Mathematics 4. Physics / Chemistry.

(5) B.Ed.: Besides one paper on General Knowledge and Current Affairs, the candidates will also be required to answer two papers from among the following subjects which they have taken at graduate or post-graduate level.

Botany, Chemistry, Commerce, Drawing & Painting, Economics, English, Geography, Hindi, History, Home Science, Mathematics, Music (Sitar, Tabla, Vocal), Physics, Political Science, Sanskrit and Zoology.

(6) B.Sc.(Engineering): The test paper shall have four sections, all compulsory, on Mathematics, Physics, Chemistry and General Knowledge & Current Affairs. Each section will consist of 45 questions. Total number of questions in the test paper will be 180.

(7) B.Sc.: Besides one compulsory paper on General Knowledge & Current Affairs, the test shall have five subjects, all having equal marks on Botany, Chemistry, Mathematics, Physics and Zoology. Out of the five subjects, the candidates will attempt any three subjects depending on the subjects they are likely to offer as major and faulty half courses in accordance with grouping as mentioned in the Prospectus.

(8) Post Graduate Diploma in (i) Computer Science & Applications and **(ii) Industrial Mathematics**: The test paper shall have questions on (i) English Language, Expression & Comprehension, (ii) General Knowledge & Current Affairs, (iii) Logic & Reasoning, (iv) Mathematics.

(9) Post Graduate Diploma in Textile Designing & Printing: The test shall judge the aptitude and performance ability in the subject through a written objective test (30 minutes) as well as a practical test (150 minutes).

(10) Post Graduate Diploma in Business Economics: The written test shall consist of objective type questions to assess the knowledge in (i) English Language, Expression & Comprehension, (ii) General Knowledge & Current Affairs, (iii) Logic & Reasoning, (iv) Economics.

(11) Post Graduate Diploma in Environmental Biotechnology: The written test shall consist of objective type questions to assess the knowledge in (i) English Language, Expression & Comprehension, (ii) General Awareness of Environmental Science (iii) Logic & Reasoning

(12) Post Graduate Diploma in Safety, Health and Environment: The written test shall consist of objective type questions to assess the knowledge in (i) English Language, (ii) Environmental General Knowledge, (iii) Logic & Reasoning, and (iv) Intermediate Level Science.

(13) M.Ed.: The test paper shall have questions of theory papers of the standard of B.Ed. or equivalent examination.

(14) M.B.A. (Business Management): The written test shall consist of objective type questions to assess the knowledge in (i) English Language, Expression & Comprehension, (ii) General Knowledge & Current Affairs, (iii) Logic & Reasoning, (iv) Quantitative ability.

(15) M.Tech.: Syllabus for M.Tech. written test will comprise of three Sections. (i) General Knowledge & Current Affairs, (ii) Logic & Reasoning, and (iii) Mathematics.

NOTE

Using the Answer Sheet: Candidates are required to be careful while using the answer sheets of entrance test. They have to follow the instructions announced at the examination centre/room. It is their own responsibility to make sure that they use the right answer sheet for each test. The supervisor will not be in a position to allow anyone to use fresh answer sheets.

At the conclusion of the test, candidates will be required to return both the test booklet and the answer sheets to the supervisor.

Test Centre Procedure: All candidates are required to reach the test centre 30 minutes before the scheduled time. Everyone is required to possess own pen, pencil, calculator, ruler, sketch pens, poster colours, water container, brushes, etc. Candidates will not be allowed to exchange and/or borrow test/writing material during the examination of entrance-test.

SYLLABUS (HIGH SCHOOL LEVEL)

GENERAL SCIENCE

Unit 1: PHYSICS

1.1 Newton's Law of Motion
1.2 Work, Power and Energy
1.3 Conduction, Convection, and Radiation
1.4 Structure of the Human Eye
1.5 Sun as a source of Energy, Absorption of solar energy by the earth-photosynthesis, solar cooker.

Unit 2: CHEMISTRY

2.1 Air, Water
2.2 Chemicals in daily life-Industrial Chemicals
2.3 Nature of Gases-Nitrogen Cycle and Fertilizers
2.4 Metals and Non-Metals-Acids, Bases and Salts
2.5 Introduction to some important organic and inorganic compounds.

Unit 3: BOTANY

3.1 Structure of Cell, Cell Division
3.2 Classification of Vegetation
3.3 Root and Stem
3.4 Absorption and Movements of Fluid in Plants
3.5 Respiration in Plants.

Unit 4: ZOOLOGY

4.1 Blood and Lymph
4.2 Respiratory System
4.3 Nervous System and Sense Organs
4.4 Reproductive System
4.5 Excretion.

Unit 5: HEALTH AND HYGIENE

5.1 Aids to Health
5.2 Environmental Pollution
5.3 General Knowledge about communicable diseases and diseases spread through air
5.4 Diseases spread through water and food
5.5 Non communicable diseases.

MATHEMATICS

Unit 1: GEOMETRY

1.1 Buddhayan-Pythagoras Principle
1.2 Extension of Buddhayan-Pythagoras principle
1.3 Locus
1.4 Construction of Angles, Triangles, Circle and its Chord, Arc of a Circle
1.5 Segment of a circle, tangent of a circle, construction of a circle.

Unit 2: MENSURATION

2.1 Area of Triangles
2.2 Area of Quadrilaterals
2.3 Area of Circle
2.4 Cuboid and cube and right circular cylinder
2.5 Right circular cone and sphere.

Unit 3: ARITHMETIC

3.1 Percentage
3.2 Profit and Loss
3.3 Interest (Simple and Compound)
3.4 Work, Time and Speed
3.5 Discount.

Unit 4: ALGEBRA

4.1 Number System & Laws of Indices
4.2 Factorization
4.3 L.C.F. and H.C.F.
4.4 Simultaneous Linear Equations
4.5 Quadratic-polynomials and Quadratic equations.

Unit 5: TRIGONOMETRY & STATISTICS

5.1 Measures of an angle
5.2 Trigonometrical ratios
5.3 Advanced Trigonometrical Ratios, Height and Distance
5.4 Frequency Distribution, Graphical Representation
5.5 Measure of central tendency: Mean, Median, Mode.

SYLLABUS (INTERMEDIATE LEVEL): SCIENCE

BOTANY

Unit 1

1.1 Cell, Structure, Ultrastructure, Organelles, Nucleus, & Nuclear Membranes, Mitochondria, Plastids, Centrosomes, Lysosomes, Microsome, Endoplasmic Reticulum, Ribosome.
1.2 Protoplasm, Cell wall, Non protoplasmic cell inclusions,
1.3 Mitosis, Meiosis, significance of genetics in meiosis, process of meiosis and its relationships with life cycle.
1.4 Difference between animal and plant cell and cell division.
1.5 RNA and DNA and its replication.

Unit 2

2.1 Ecology-Its meaning, ecological factors (climate, edaphic, topographic, and biotic).
2.2 Elementary knowledge of ecosystem, its meaning, structure, living & nonliving constituents, dissolved minerals and gases in water, producers, consumers, decomposers.
2.3 Lakes and forest ecosystem, food chains, food network, and pyramid, place of men in ecosystem.
2.4 Environmental pollution and its elementary knowledge, causes, control, types of pollution. Domestic detergents, sewage, chemicals in industry, Automobile exhaust, nuclear fission of radioactive substances, smoke, noise, pesticide.
2.5 Genetics-Its meaning, Mendelism, Experiments of Mendel & Laws of heredity.

Unit 3

3.1 Modern classification of plant kingdom (Ostwald & Tippo), Classification of Angiosperms, Description.
3.2 Sporogenesis-formation of Micro & Macro spores, detailed study of life cycle of Angiospermic plant.
3.3 Fruit, Dispersal of fruits and seeds.
3.4 Cell Differentiation-Plant tissue, classification of Meristematic and permanent tissues, their functions and classification of tissue system.
3.5 Identification & Economic importance of the following families-Cruciferae, Malvaceae, Leguminosae, Compositae, Cucurbitaceae, Liliaceae.

Unit 4: SYSTEMATIC STUDY OF PHYLA TAKING REPRESENTATION EXAMPLES-OCCURRENCE, STRUCTURE, ANATOMY AND LIFE CYCLES OF THE FOLLOWING:

4.1 Algae-Elementary knowledge (general characteristics & uses), detailed study of Ulothrix & Spirogyra.
4.2 Bacteria-Structure, Nutrition, Reproduction & Economic importance. Fungi-Structure, detailed study of Rhizopus, Yeast and their economic importance.
4.3 Bryophyta-Structure and economic importance, detailed study of Moss eg. Funaria.
4.4 Pteridophyta-Structure, detailed study of Fern.
4.5 Gymnosperm-General Description and outline of the life cycle of Cycas.

Unit 5: PLANT PHYSIOLOGY

5.1 Chemical composition of inorganic nutrients in plant ash and soil water, absorption, dispersion and osmotic pressure; Nitrogen cycle; Special modes of plant nutrition-autotrophic, parasitic, saprophytic, symbionts, insectivorous, and their inter-relationship.
5.2 Photosynthesis-importance of chlorophyll, light and CO_2, production and importance of ATP, important products of photosynthesis.
5.3 Transpiration-factors, importance, mechanism of opening & closing of stomata.
5.4 Translocation and storage of food.
5.5 Growth and movement-definition of growth, spheres of growth and its measurement, main types of movements in plants, hormones & their functions in growth.

PG DIPLOMA IN ENVIRONMENTAL BIOTECHNOLOGY

Logic & Reasoning Ability: A pre-requisite skill for understanding environment management is the ability of logical reasoning and decision making. This section of the test will examine the ability of the candidate, to evaluate an inference or argument and discriminate between professional decision making and guess work.

Example 1: Which of the following would come in place of the question mark (?) in the following letter series :
DEF HIJ MNO ?
(A) STU (B) RST (C) RTV (D) SRQ
Answer: (A)

Example 2: Atmaram was born on 15th April, Rajiv was born 5 days before him. If Independence day fell on Friday that year on which day was Rajiv born?
(A) Tuesday (B) Thursday (C) Sunday (D) Saturday
Answer: (B)

English Language, Expression & Comprehension
English Language: Grammar (Active Passive, Common errors in English, Direct Indirect, Transformation-Simple, Complex, Compound, Synthesis of Sentences), Vocabulary (Synonyms, Antonyms, one word substitution), Figure of speech, Idioms, Phrases.
Expression: Candidate's ability to express himself/herself in English Language will be assessed in this section.
Comprehension: Candidate's power of comprehension of the subject presented will be assessed. Many of the questions may be based on what is implied in the massage, rather than on what is explicitly stated. The ability to draw inferences from the material is critical for successfully completing this section.
Example 1: Read the following passage and choose the one best answer out of (A), (B), (C), (D).
Popular belief holds that a snake's age can be told by counting rings, but the idea is fallacious. In fact a rattle snake may lose old skin as often as four times a year.
Q. How often does a rattle snake shed its skin ?
(A) Once every four years.
(B) Once every four months.
(C) Upto four times every year.
(D) Four times more often than other snakes.
Answer:(C)

General Awareness in Environmental Science
This topic will contain questions pertaining to earth sciences and environmental sciences.
Example: Q-1 Landslides in mountanious regions are caused by
(A) Extensive deforestation
(B) Mining
(C) Building construction
(D) Plantations
Answer: (A)
Q-2 Earth is protected from UV Radiations by
(A) Green house gases
(B) Water vapours
(C) Ozone layer
(D) Nitrogen gas
Answer: (C)

CHEMISTRY

Unit 1: GENERAL CHEMISTRY
1.1 & 1.2 Atomic structure-Atom, subatomic particles, discovery of electrons, protons, neutrons, Rutherford model of the atom, Bohr's model of the hydrogen atom, Rydberg relationship.
1.3 & 1.4 Elementary concepts of binding energy, electronic configuration, electron shells, subshells, quantum numbers, Pauli's exclusion principle, Hunds' rule, Aufbau principle, shapes of s, p and d orbitals.

1.5 Nuclear structure-Composition of the nucleus, isotopes and isobars, elementary idea of nuclear binding energy, radioactivity, natural and artificial radioactivity, half-life, displacement law, uses of radioisotopes.

Unit 2

2.1 Mendeleev's classification of the elements, basis for periodic classification, variation of general properties like ionization potential, electron affinity, atomic volume etc.

2.2 Chemical bonding, ionic bonds, covalent bonds, coordinate-covalent bonds, electronic configuration of simple compounds, elementary ideas of hydrogen bonding and its influence on physical properties.

2.3 Electrode potential, electrochemical series, oxidation-reduction reactions, oxidation number, balancing of equations by oxidation number and charge.

2.4 Characteristics of bonding in organic compounds, structural formulae, atoms and molecular orbitals, hybridization and covalent bonds, hydrogen bonds and position isomerism, functional isomerism, geometric isomerism and optical isomerism (lactic acid).

2.5 Ideal gas laws, Dalton's laws of partial pressure, Graham's diffusion law.

Unit 3: INORGANIC CHEMISTRY

3.1 I A, zero group elements, H_2, inert gases and alkali metals. Position in periodic table of H_2, inert gases and alkali metals (Na and K), on the basis of electronic configuration. Isotopes of H_2. Chemistry and uses of H_2O_2, Na_2CO_3 and $(NH_4)_2HPO_4$.

3.2 II A & III A group elements-Position in the periodic table of group II A elements (Mg, Ca, Sr and Ba) on the basis of electronic configuration. Chemistry of plaster of Paris, cement, anhydrous $AlCl_3$, alums, metallurgy of aluminium and its uses.

3.3 IV A & V A group elements-Position in periodic table of C, Pb, N, P, Sb and Bi on the basis of electronic configuration. Fuel gases (oil gas, coal gas and petrol gas), their preparation, manufacture and uses. Chemistry of stannous chlorides, white lead, basic lead acetate, NH_3 $HN0_2$, N_2O, $HN0_3$, Phosphates, H_3PO_4, As_2O_3, fertilizers of N and P.

3.4 VI A & VII A group elements-Position in the periodic table of Cl_2, Br_2 and F_2 on the basis of electronic configuration. Chemistry of O_3, H_2SO_4, Cl_2, Br_2, F_2 and bleaching powder.

3.5 Transition metals-Position in periodic table of I B, II B and VIII B group elements on the basis of electronic configuration. Metallurgy of Cu, Ag, Zn and Fe. Chemistry of Cu_2Cl_2, $AgN0_3$, $ZnCl_2$, calomel, corrosive sublimate, ZnO, Mohr's salt and $FeCl_3$.

Unit 4: PHYSICAL CHEMISTRY

4.1 The thermodynamics and thermochemistry-First law of thermodynamics, definition, internal energy, Hess's law of constant heat summation (numerical problem), heat of reaction, heat of combustion, heat of formation, heat of neutralization.

4.2 Chemical equilibrium-Law of mass action, equilibrium constant, Le Chateliers principle (qualitative interpretation), effect of temperature, pressure and concentration on equilibrium constant.

4.3 Electrolysis-Arrhenius theory of electrolytes and its limitations, Ostwald's dilution law, degree of dissociation, dissociation constant, acids bases and salts, neutralization, hydrolysis, pH, buffer solutions, acid-base indicators, solubility, solubility product and the common ion effect.

4.4 Solutions-Various methods of representing concentrations of solutions, vapour pressure, osmotic pressure, Berkeley and Hartley method of determining osmotic pressure, elevation in boiling point and depression in freezing point to determine molecular weight of nonvolatile substances (excluding derivation of relation).

4.5 Catalysis-Catalysts, properties of catalysts, types of catalysis, homogeneous and heterogeneous catalysis, theory of catalysis, intermediate compound formation, adsorption theory, enzyme catalysis, colloidal solution types and their properties (excluding electrical properties).

Unit 5: ORGANIC CHEMISTRY

5.1 Nature of organic compounds, purification and separation methods, Detection of elements (C, H, N, S and Halogens).

5.2 Classification of organic compounds and their nomenclature (IUPAC system), Hybridization.

5.3 Hydrocarbons-Alkanes, alkenes and alkynes and alkyl halides (general methods of preparation and properties).

5.4 Hydrocarbons having various functional groups. [Alcohols (monohydric), aldehydes and ketones (formaldehyde, acetaldehyde, acetone), carboxylic acids (monocarboxylic acids), ethers, esters (ethyl acetate) and primary amines] Methods of preparation and important physical and chemical properties.

5.5 Aromatic Compounds-Comparison of aliphatic and aromatic compounds, benzene and its aromatic character, Prepartion, properties of aromatic compounds (nitrobenzene, chlorobenzene, phenol, benzaldehyde, benzoic acid and aniline).
Our food and its composition (introductory ideas about vitamins, carbohydrates, proteins, oils, and fats).

MATHEMATICS

Unit 1: ALGEBRA AND PROBABILITY

1.1 Surds, Solution of simultaneous and quadratic equations, Arithmatic, Geometric and Harmonic progressions, Binomial theorem for any lndex, Logarithms, Exponential and Logarithmic Series.

1.2 Determinants and their application in solving linear simultaneous equations, Matrix, its types, addition, multiplication, adjoint and inverse of 2 x 2 matrices.

1.3 Definition of Probability, Dependent, lndependent events, Numerical problems on addition and multiplication theorems of Probability.

l.4 Idempotent law, Identities, Complimentary laws, De Morgan’s theorem, Mapping, Inverse relation, Equivalence relation, Peano's axioms, Definition of Rationals and Integers through equivalence relation.

l.5 Complex number as an ordered pair of real numbers, Geometrical representation, Absolute values, Triangular inequalities.

Unit 2: TRIGONOMETRY AND VECTORS

2.1 Simple identities, Trigonometric equations, Properties of triangles, Use of mathematical tables, Solutions of triangles.

2.2 Height and Distances.

2.3 Inverse function, De Moiver’s theorem.

2.4 Position vector, addition and subtraction of vectors.

2.5 Scalar and vector products, Scalar triple product and their application in geometry and mechanics.

Unit 3: CALCULUS

3.1 Notions of limit, Continuity and differentiability, Differentiation of function, Rate of change.

3.2 Tangents and normals, simple examples of maxima and minima of functions of one variable.

3.3 Integration of functions by parts, by substitution and by partial functions.

3.4 Definite Integration, application to volumes, surfaces, frustums of sphere, cone and cylinder.

3.5 Ordinary differential equations-variable, separable and linear.

Unit 4: COORDINATE GEOMETRY

4.1 Coordinate geometry of the straight line, pair of straight lines.

4.2 Circle

4.3 Parabola

4.4 Ellipse

4.5 Hyperbola, Tracing of conics.

Unit 5: STATICS AND DYNAMICS

5.1 Velocity, composition of velocity, relative velocity, acceleration, composition of acceleration, motion under gravity.

5.2 Projectiles, Laws of motion, Principles of conservation of momentum and energy.

5.3 Direct and Oblique impact of smooth bodies.

5.4 Composition of Co-planer, Concurrent and Parallel forces, Moments and Couples.

5.5 Resultant of a set of Co-planar, forces and conditions of equilibrium, determination of centroids in simple cases, problems involving friction.

PHYSICS

Unit 1: MEASUREMENT AND MECHANICS

1.1 Dimensional Analysis: Examples of Dimensional formulae based on fundamental quantities of S.I. system, Testing of Dimensional Balance, simple examples of establishing relationships among the Physical Quantities through Dimensional Balance.

Motion in a Plane: Scalar Product of a Vector, Scalar product of two Vectors, (Example of work). Vector forms of the Principles of motion and Projectile Motion, Uniform Circular Motion, Angular Displacement, Angular Velocity, Centripetal and Centrifugal forces, simple examples of Centripetal force and simple explanations.

1.2 Rotatory Motion in a Rigid Body: Moment of a force, Torque, Angular Acceleration, Angular momentum, and Angular Kinetic Energy, Relationship between angular and linear motion principles, Moment of Inertia, Moment of Inertia of some definite solid shapes.

Universal Gravitation. Motion of Planets and Kepler's Laws, Laws of Gravitation, Universal Gravitation Constant, Derivation of acceleration due to Gravity under different conditions of Gravitation, change in acceleration of gravity with height, Gravitational field, Gravitational Potential Energy, Gravitational Potential, Orbital speed of Satellite, Weightlessness in Satellite,

Maximum height attained by a Projectile, Escape Energy and Velocity, Binding Energy.

1.3 Simple Harmonic Motion: Simple Harmonic Motion as defined in the form of uniform Circular Projectile, Displacement Equations, Restoring Force, Laws of Simple Harmonic Motion in linear form, formulae of Periodic Time, (i) Simple Pendulum and (ii) Ideal spring and its motion. Periodic Displacement Graph of Simple Harmonic Motion. Assumption of Phase and Displacement and its simple nature. Energy Transformation in Simple Harmonic Motion, Conservation of Mechanical Energy, Total Energy, and its relationship with Amplitude, Energy Dissipation and Damping.

1.4 Elasticity: Volume and Longitudinal Strain and stress, Hooke's Law and its limitations, Young Modulus, Potential Energy in a stretched wire, Modulus of Rigidity, Qualitative Explanation of Elasticity through solid's Molecular Model, Inter-Atomic Force Constant.

1.5 Surface-Tension: Cohesive and Adhesive Forces, Assumptions of Surface forces through some examples of liquids, Capillary cohesion and its natural uses, some events based on the Surface Tension.

Flow of Liquids: Perfect (Ideal) liquid, Stream-lined Flow, Energy of a Flowing Liquid, (Pressure, Kinetic and Potential) Bernoulli's Theorem, and its Applications. Assumptions of a Viscous Liquid, Velocity Gradient of Viscosity, Coefficient of Viscosity, Stoke's Law, Terminal Speed.

Unit 2: HEAT & GENERAL PROPERTIES OF MATTER IN BULK STATE

2.1 Temperature: Gas Thermometer and Resistance Thermometer, their Principles and Numerical Problems, Principle of Thermo Couple Thermometer, Calibration Curve, Total Radiation Pyrometer.

2.2 Kinetic Model of Gases: Molecular Agitation, Assumptions of Kinetic theory, Molecular weight of Gaseous Pressure, Number of Molecules and its dependance on their velocity, Boyle's Laws of Gases, Thermal Equilibrium and concept of Temperature, Temperature and Kinetic Energy, Boltzman Constant, Deviations in Common Gases under the laws of Perfect Gases, Finite size of Molecules, Inter-molecular Forces, Van der-Waal's Equation, Isothermal Curves for real gases, Critical Temperature and Critical Pressure, Difference between Vapour and Gas.

Kinetic Models of Liquids and Solids: Inter-molecular Forces and Potential Energy Curves, Molecular attraction and Repulsion, Molecular Models of Liquids and Solid Crystals, Thermal Expansion, Freezing Point, Boiling Point and Explanation of Latent Heat.

2.3 Thermo-dynamics: Work done by a Thermo-dynamics system, Internal Energy (Constant dQ-w), The First Law of Thermo-dynamics (dQ=du+w), Difference between Specific Heats of an Ideal gas on constant volume and constant pressure, Derivation of the Equation C_p-C_v=R, Form of Internal Energy (linear, rotational, molecular and lattice vibrations in molecules), Internal Energy (Randomized Molecular Motion), Explanation of Second Law of Thermo-dynamics.

2.4 Iso-thermal and Adiabatic Processes: General Assumptions and Examples, Relationship between Isothermal and Adiabatic processes in an ideal gas, Volume Elasticities of Processes, Isothermal and Adiabatic Processes.

2.5 Thermal Conduction: Thermal conduction in a rod of a good conductor material, Rate of thermal conduction and its transverse section, Temperature gradient, Heat conduction coefficient, Explanation of thermal conduction through Kinetic Model, Free Electron Model for metallic thermal conduction.

Unit 3: LIGHT & WAVE-MOTION

3.1 Refraction or Light at Spherical Surfaces: Formula for refraction on concave and convex spherical surfaces (Lenses), Refraction formulae for thin lenses, Dependence of focal length on refraction, Joint focal length of two lenses when put together.

Chromatic Aberration: Dispersive power of an optical medium, Longitudinal chromatic aberration of lenses, Spherical aberration and its relationship with the radius of the Lens, Achromatic combination of lenses.

3.2 Telescope and Microscope: Spherical Aberration in common Lenses' images and chromatic aberrations, Dependence of spherical aberration on the radius of the lens, Applicability of thin lenses for elimination, Achromatic association for eliminating spherical aberration, Paraboloidal Mirror and elimination of aberrations, Reflecting Telescope, Concept of Resolving Power, Need of big eye-piece lens in Telescope, Resolving power of microscope, structure and function of Electron-Microscope.

Photometry: Radiant Flux of source of illumination, Luminous Flux, Concept of Luminous Intensity, Units Lumen and candela, Luminous Efficiency of Electric Bulbs, Illumination of a surface, Unit-Lux, Inverse square law for Illuminance, Lambert's Cosine Law for illuminance.

3.3 Progressive Waves: Disturbances in wave-motion, and Energy transference, Time and Distance, Displacement Graphs in Progressive Waves, Phase and Phase Difference, Wave Front, Huygen's Principle of Secondary Wavelets.

Wave-nature or Light: Electromagnetic Spectrum (From Gamma Rays to Hertzian Waves) Newton's Corpuscular Theory, Motion of light in different media, Focault's method of light motion, Diffraction of light.

3.4 Speed or Mechanical Waves: Newton's formula for Longitudinal Waves, Revision in Laplace Law for gases, Effect of Pressure and Temperature on gaseous diffusion.

Super-position or Waves: Interference of two waves, Interference of waves from Coherent Sources, Examples of Sound Interference, Description of Young's Experiments, Quincke's experiments, Formation of Fringes, Width of Fringes, Practical examples of light Interference.

3.5 Beats in Sound Waves, frequency of beats, Stationary Waves in a Bounded Medium, Nodes and Antinodes, Stationary waves in Air Columns, Odd Harmonics, Transverse Waves in a stretched rope, Fundamental frequency of Stationary Waves in a rope, Sonometer, Resonance Tube, and Tuning Fork (Simple musical instruments based on Air Columns and Vibrations as Flute, Sitar and Violin).

Polarization or Light Waves: Un-polarized and Polarized light (Only Transverse Waves), Polarization of light, Production of Plane Polarized light, Polaroid.

Doppler's Effect: Doppler's effect in sound, Examples of Doppler's

effect, Doppler's effect in light, Estimation of motion of stars and Galaxies through Doppler's effect.

Unit 4: ELELTRICITY & ELECTRO-MAGNETISM

4.1 Electric Field and Potential: Coulomb's Law, Electric field and Potential of a Point charge, Electric Dipole, Couple on an Electric Dipole in a uniform Electric field, Electric Dipole Moment, Electric field and Potential derivations in transverse and longitudinal positions of Dipole, Equipotential surface, Electric field and Potential on uniform plane surface.

4.2 Electric Capacitance: Concept of Capacitance, Capacitor-Parallel Plate and spherical, Di-electric effect on capacitor, Combinations of Capacitors-in series and in parallel form, Energy of a charged Capacitor, Practical utility and applicability of Capacitor.

Electric Conduction: Free Electron Model of Electric conduction, Drift velocity of free Electrons, Relation between Electric current and drift velocity, Electric Resistance and Ohm's Law, Effect of Temperature on Resistivity, Ohmic and non-ohmic Circuits with examples, Dynamic Resistance.

4.3 Simple Circuits: Kirchhoff's Laws, Combination of Resistance in series and in parallel form, Wheat-Stone's Bridge's Principle, Meter Bridge, Need of High Resistance Instrument for measuring Electro Motive Force (EMF), Principle of Potentiometer and its utility.

4.4 Moving Charges and Magnetic Field: Force on a charge in a Magnetic Field, Motion of Charged particle in a Magnetic field, Explanation of the force on a Current-Carrying Conductor on the basis of the force on a Moving charge, Biot-Savart Law, Magnetic field at the Centre of a Circular Current-Carrying Coil, Magnetic-Field inside a long Current-Carrying Solenoid.

Magnetism: Couple on a Current loop in a Magnetic field, Magnetic Dipole Moment, Magnetic field due to a short Bar-Magnet-End-on Position, Broad-side on Position, Atomic Model of Magnetism, Magnetic Moment in axial rotation and spin of Electrons in Dia, Para and Ferro-magnetic substances.

4.5 Electro-magnetic Induction and Alternating Current: Magnetic flux, Laws of Faraday and Lenz, Explanations of Electro-magnetic Induction with Lorentz's forces, Time, Current and Potential Difference, Alternating Current, Peak value of alternating current, Mean value and Root Mean square value, Mutual Induction, Self-Induction, Effect of Core on self-induction, Behaviour of Self-induction coil as a resistance, Power in AC Circuit, Wattless current, uses of Transformers, Behaviour of capacitor in Alternating Current circuits, Qualitative Explanation of Electric pendulum, frequency, Resonant Circuits.

Unit 5: ELECTRON, RADIATION, ATOMIC & NUCLEAR PHYSICS

5.1 Diodes and Triodes: Thermionic Emission, Vaccum tube, Action of Diode, Characteristic Curves of Triode valve, simple Circuits of Diode and Triode, Semi-conductors of 'n' and 'p' type, Explanation of flow of current in n-p type semi-conductors, Simple circuits of p-n-p Transistor, Comparison of transistor with Diode.

5.2 Discovery of Electron: Origin of Cathode Rays, their nature, Positive-Rays, Ion and Isotopes, Trajectory of charged particles in a Electro-magnetic field, Cathode-Ray Oscilloscope.

Photo-Electric Effect: Photo-electric emission, Einstein's explanation of Photo electric effect, Work-function and Threshold frequency, Quantum Model of Light, Photo-electric Cell.

5.3 Structure of Atom: Thomson's Model of Atomic structure, Qualitative description of Rutherford's α-particle scattering experiment, Rutherford's Model of Atomic structure, inability of Rutherford's model in explaining linear spectrum, Bohr's Model of Atomic structure, Assumptions and formula.

Origin of Spectrum: Series of Hydrogen Spectrum, energy Levels of Atoms, Excitation and Ionization Potential, energy level graph (Emission and Absorption), Explanation of spectrum, calculation of wave-length through Energy transitions, Linear and Band Spectrum and its relationship with substance, Solar Spectrum, Fraunhofer's lines, Flourescence and phospherescene.

5.4 Radiation: Radiation Energy and its similarity with light, Emissive Power and Absorptive Power, Concept of perfectly Black Body, Stefan's Law, Graphical description of the spectrum of black body radiation, Wein's Principle, Hypothesis of Planck, Planck's constant.

X-Rays: Production of X-Rays by Coolidge Tube, Intensity of X-rays, Control on X-Rays Penetration, Electro-magnetic nature of X-rays.

5.5 Radio Activity: Concept of Half-life statistical nature of Radio-active Process, Path of charged Particles, radio active carbon dating.

Structure or Nucleus: Intra-nuclear force, simple process of Exchange (Fundamental Particles), Electron, Proton, Neutron, Pie Meson, Neutrino and mutual transformation of mass and Energy.

Nuclear Energy: Concept of Nuclear Binding Energy (Examples of Deutron and Alpha), Nuclear Fission, Nuclear Reactor (Critical Mass and Chain Reaction), Retardants and Controlling substances, Uses of Nuclear Reactors, Atomic Fusion, Solar Energy.

Some Modern Applications of Electronics: Television, Radar and Laser-Maser.

ZOOLOGY

Unit 1

1.1 Origin of life-Oparin's theory, Miller's Experiment and place of virus in the evolution of life.

1.2 Organic Evolution-Basic idea and its evidences and principles of evolution (Lamarckism and Darwinism)

1.3 Mechanism of evolution-Definition of variation, causes and kinds of variations (Mutation theory of Hugo De Vries), Evolution through the ages-outline of evolution (animals & plants together).

1.4 Evolution of Man-Prehistoric man, Java Ape man, Peking man, Neanderthal and Cromagnon man in the context of special characteristics.

1.5 Human Genetics and Eugenics-Sex determination, Sex-linked characters, human hereditary traits in the context of blood groups, subsidization of superior students and intelligence quotient (IQ).

Unit 2

2.1 Metabolism-General treatment, repair of tissues and their regeneration.

2.2 Digestion-Food, enzymes and digestion, absorption and assimilation (comparison between man and rabbit).

2.3 Physiology of excretion-Chemical nature of excretory products (functions of liver & kidney in Rabbit).

2.4 Respiration-Respiration in Rabbit, cellular respiration, function of mitochondria, role of ATP and ADP.

2.5 Nervous system-Conduction of impulses (electro-chemical phenomenon), autonomic nervous systems (sympathetic and parasympathetic) and control of nervous system and visceral organs in Rabbit, Endocrine system, hormones and their functions.

Unit 3

3.1 Modern Classification and animal kingdom (based on Storer and Usinger book), main characteristics of some classes and phyla with example.
3.2 Animal tissues.
3.3 Protozoa-Amoeba-Habit and habitat, Morphology, physiology, Osmoregulation, Locomotion; *Entamoeba histolytica*-morphology and prevention of disease caused by it.
3.4 Plasmodium-History, life cycle, control and therapy of Malaria.
3.5 Porifera-Simple sponge (Leucosolenia), its physiology, Economic importance of sponge and sponge industry.

Unit 4

4.1 Cnidaria, Hydra-Morphology, Physiology, habit and habitat, regeneration and grafting, Physiological division of labour and tissue differentiation.
4.2 Aschelminthes-Ascaris, morphology, life cycle, therapy and control.
4.3 Annelida-*Pheretima posthuma*-Morphology and Anatomy, Economic importance.
4.4 Arthropoda-Cockroach (*Periplanata americana*)-Morphology and Anatomy.
4.5 House fly-Morphology, life cycle and control.

Unit 5

5.1 *Rana tigrina*-Cranial skeleton.
5.2 Gametogenesis, fertilization and reproduction in Frog.
5.3 Three primary germ layers, their fate and metamorphosis in Frog.
5.4 Rabbit-Study of reproductive system.
5.5 Osteology, anatomy and histology in Rabbit.

SYLLABUS (INTERMEDIATE LEVEL): COMMERCE

BANKING

Unit 1: MONEY, CURRENCY EXCHANGE

1.1 Definition and functions of Money.
1.2 Value of Money-Quantity theory of money, factor affecting value of Money.
1.3 Inflation, Deflation.
1.4 Silver and gold standard, different forms of gold standard.
1.5 Mono-metalism and Bi-metalism.

Unit 2: PAPER MONEY

2.1 Monetary standard in India.
2.2 Paper Money-Merits, Demerits and Kinds (Representative, Convertible and Non-convertible).
2.3 Methods of Note issue, Government & Banks, Single and multiple Bank note issue.
2.4 Characteristics of a good paper Money.
2.5 Paper Money in India.

Unit 3: BANKING

3.1 Definition, Origin and Growth of Banks.

3.2 Organisation of Banking Business.
3.3 Functions of Banks-Deposits, Loans and Other Services.
3.4 Bank Accounts–Saving, Fixed, Recurring, Current etc.
3.5 Instruments-Bill, Promissory Notes, Hundies etc.

Unit 4: EMPLOYMENT OF FUNDS BY BANKS

4.1 Cash, Credit and Investment.
4.2 Loans & Advances, Security against Advances.
4.3 Bank Balance Sheet.
4.4 Bank Failure and Bank Crisis.
4.5 Period of Banking Crisis in India.

Unit 5: INDIAN BANKING

5.1 Development of Banking Business in India.
5.2 Agricultural, Industrial and Commercial Banks-Meaning, Organisation etc.
5.3 Money Lender, Indigenous Bankers, Cooperative Credit Societies, Chit Fund & Government takavi, Land Mortgage Banks, etc.
5.4 Banking System-Industrial Banks, Foreign Exchange Banks, State Bank of India, Banking Services of Post Office.
5.5 Reserve Bank of India.

BOOK-KEEPING & ACCOUNTANCY

Unit 1

1.1 Principles of Double Entry System, Concept of Accounting.
1.2 Journal and its Subsidiary Books.
1.3 Ledger and Trial Balance.
1.4 Errors and its rectification.
1.5 Final Accounts-Trading, Profit & Loss Account, and Balance Sheet with Adjustments.

Unit 2

2.1 Bills of Exchange, Self Balancing System.
2.2 Banking Transaction, Bank Reconciliation Statement.
2.3 Average Due Date & Account Current.
2.4 Joint Venture.
2.5 Consignment.

Unit 3

3.1 Adjustments, Admission of Partner .
3.2 Outgoing of Partner.
3.3 Dissolution of Firm.
3.4 Similarities & Difference between Indian Accounting System & Double Entry System.
3.5 Indian System of Accounting-Kachchi & Pakkhi Rokar Bahi, Jama & Nam Nakal Bahi, Khatoni, Preparation of Final Accounts.

Unit 4

4.1 Issue, Forfeiture, Re-issue of Forfeited Shares.
4.2 Issue & Redemption of Debentures.
4.3 Purchase of Business by Company and Profit or Loss prior to Incorporation.
4.4 Disposal of Profit, Bonus Shares & Dividend.
4.5 Final Accounts of Company-Trading, Profit & Loss Account, Profit & Loss Appropriation Account, and Balance Sheet.

Unit 5

5.1 Capital & Revenue, Reserves & Fund.
5.2 Depreciation.

5.3 Receipt & Payment Account, Income & Expenditure Account
5.4 Single Entry System
5.5 Investment Account.

BUSINESS ORGANIZATION

Unit 1

Business and Modern Civilization, Social-responsibility of Business, Establishment of Business, Necessary qualities for getting success, Sole proprietorship.

Unit 2

Concept of Partnership, Registration and Dissolution of Partnership, Joint Stock Companies, Management of Joint Stock Companies, Company Meetings.

Unit 3

Banking Services of Post Office, Other Services of Post Office, Cheque, Bills of Exchange and Hundi, Promissory Note and Endorsement.

Unit 4

Definition and Functions of Management, Importance of Management, Procedure of Business Office, Filing (Vertical and flat), Inland and Foreign Service.

Unit 5

Import and Export Trade, Middlemen, Agents, Commercial Correspondence, Official Correspondence.

COMMERCIAL MATHEMATICS

Unit 1

1.1 Metric System of Measurements
1.2 Ratio and Proportion
1.3 Partnership
1.4 Percentage
1.5 Profit and Loss

Unit 2

2.1 Simple Interest
2.2 Compound Interest
2.3 Percent Worth & Discount
2.4 Commission & Premium
2.5 Exchange, Share and Stock

Unit 3

3.1 Quadratic Equations
3.2 Arithmetic Progression
3.3 Geometric Progression
3.4 Harmonic Progression
3.5 Miscellaneous Series

Unit 4

4.1 Permutation
4.2 Combination
4.3 Binomial Expansion
4.4 Exponential Series
4.5 Logarithmic Series

Unit 5

5.1 Data Representation
5.2 Measures of central tendency
5.3 Dispersion & Skewness
5.4 Index numbers
5.5 Sampling

SYLLABUS (INTERMEDIATE LEVEL): ARTS

चित्रकला

Practical Examination Time: One Hour

वस्तु चित्रण **(Still Life):** किसी एक वस्तु का अथवा कुछ वस्तुओं के समूह (जैसे–किताब, डिब्बा, बोतल, लोटा, गिलास, प्लेट तथा प्रयोग में आने वाली सभी वस्तुएँ) का जिस स्थिति में वह हमारे सामने रखा है और जैसा उसमें प्रकाश, छाया व अन्धकार का प्रभाव हमको दिखाई देता है, ठीक उसके अनुरूप अपने चित्र को बनाना।

ECONOMICS

Unit 1: INTRODUCTION, CONSUMPTION & PRODUCTION

1.1 Introduction to Economics, Problem of choice, Indian Economic Thought, Definition of Western Thinkers.
1.2 Consumption-Meaning and Importance, Utility.
1.3 Law of Demand, Price Elasticity of Demand.
1.4 Production-Meaning & Importance, Laws of Production.
1.5 Factors of Production.

Unit 2: PRICE THEORY

2.1 Market-Definition, Classification & Extension of Market
2.2 Cost of Production, M. C., A. C. and their relationship.
2.3 Revenue-T. R., A. R., M. R., and their relationship.
2.4 Price determination under perfect competition.
2.5 Price determination under imperfect competition.

Unit 3: FOREIGN TRADE & PUBLIC FINANCE

3.1 Foreign Trade-Merits & Demerits.
Foreign Exchange-Methods of earning foreign exchange.
3.2 Import and Export trade of India.
3.3 Foreign Trade Policy of India.
3.4 Direct & Indirect tax.
3.5 Sources of Income of Central & State Govts.

Unit 4: DISTRIBUTION

4.1 Problems of Distribution, Modern theory of Distribution, National Distribution with reference to India.
4.2 Rent-Definition, Ricardian Theory, Relation between Rent & Price.
4.3 Wages-Money, Wage & Real Wage, Standard of Living Efficiency of Labour, Effect of TU's on rate of wage.
4.4 Interest-Definition, Difference in rate of gross and net interest.
4.5 Profit-Gross and Net Profit.

Unit 5 : ECO. SYSTEMS, STATISTICS & EXCHANGE

5.1 Economic Systems-Capitalism, Socialism and Mixed Economy.
5.2 Statistics-Meaning, Definition and Importance, Measures of Central Tendency.
5.3 Presentation of Data-Bar diagrams.
5.4 Exchange-Direct & Indirect exchange.
5.5 Economy & Employment-Causes and remedies of unemployment, Present position of unemployment in India.

ENGLISH

Unit 1: Common Errors in English.
Unit 2: Julius Caesar.
Unit 3: Figures of Speech, Idioms and Phrases.
Unit 4: Transformation of Sentences and Synthesis.

Unit 5: Vocabulary-Antonyms, Synonyms, Homophones, one word substitutions etc.

हिन्दी

यूनिट 1: हिन्दी गद्य का विकास

1.1 हिन्दी गद्य का विकासात्मक परिचय 1.2 युग प्रवर्त्तक लेखक एवं प्रमुख रचनाएँ

1.3 कथा साहित्य 1.4 नाटक साहित्य

1.5 विभिन्न नवीन विधाएँ–संस्मरण, रेखाचित्र, डायरी, रिपोर्ताज

यूनिट 2: हिन्दी काव्य का विकास–भक्तिकाल एवं रीतिकाल (प्रमुख कवि, प्रवृत्तियाँ तथा रचनाएँ)

2.1 भक्तिकाल की सामान्य विशे"ताएँ 2.2 सगुण काव्य धारा

2.3 निर्गुण काव्य धारा 2.4 रीतिकाल की सामान्य विशे"ताएँ

2.5 रीतिकाल के प्रमुख कवि तथा रचनाएँ

यूनिट 3: हिन्दी काव्य का विकास–आधुनिक कला (प्रमुख कवि, प्रवृत्तियाँ तथा रचनाएँ)

3.1 भारतेन्दु युग तथा द्विवेदी युग 3.2 छायावाद तथा रहस्यवाद

3.3 प्रगतिवाद, प्रयोगवाद तथा नई कविता

3.4 काव्य की प्रमुख विधाएँ–प्रबन्ध (महाकाव्य तथा खण्ड काव्य) तथा मुक्तक

3.5 आधुनिक काल के प्रमुख कवि तथा उनकी कृतियाँ–भारतेन्दु हरिशचन्द्र, जगन्नाथ दास रत्नाकर, अयोध्या सिंह उपाध्याय 'हरिऔध', मैथिली शरण गुप्त, हरिवंश राय बच्चन, माखनलाल चतुर्वेदी, बालकृ"ण शर्मा 'नवीन', श्रीधर पाठक, सुभद्रा कुमारी चौहान, जयशंकर प्रसाद, सूर्यकान्त त्रिपाठी निराला, सुमित्रानंदन पन्त, महादेवी वर्मा, रामधारी सिंह दिनकर, सच्चिदानन्द हीरानंद वात्स्यायन 'अज्ञेय', नरेन्द्र शर्मा, भवानी प्रसाद मिश्र, गजानन माधव मुक्तिबोध, गिरिजा कुमार माथुर, धर्मवीर भारती।

यूनिट 4: काव्य शास्त्र

4.1 रस–सामग्री–स्थायी भाव, विभाव, अनुभाव, संचारी भाव

4.2 रस के भेद– परिभा"ाा तथा उदाहरण

4.3 शब्दालंकार– अनुप्रास, यमक, श्ले"ा, पुनरूक्ति–भेद तथा उदाहरण

4.4 अर्थालंकार–उपमा, रूपक, उत्प्रेक्षा, प्रतीप, व्यतिरेक, सन्देह, भ्रान्तिमान, असंगति, विरोधाभास विभावना

4.5 छन्द–दोहा, सोरठा, चौपाई, रोला, कुण्डलिया, छप्पय कवित्त, सवैया।

यूनिट 5: व्याकरण

5.1 सन्धि (स्वर, व्यंजन, विसर्ग), समास, उपसर्ग, प्रत्यय

5.2 शब्दरूप–राम, फल, लता, कवि, भानु, धातुरूप– पठ्, भू, दृश

5.3 लोकोक्ति तथा मुहावरे

5.4 पद–संज्ञा, सर्वनाम, क्रिया, विशे"ाण

5.5 विपरीतार्थक शब्द, समानार्थक शब्द, वाक्यांश के लिए एक शब्द ।

HOME SCIENCE

Unit 1 : CHILD DEVELOPMENT

1.1 Neonate.
1.2 Parental Development and pregnancy.
1.3 Infant care and Development.
1.4 Child Development & Behaviour.

1.5 Personality, Family Planning, Infant Mortality, Child Welfare.

Unit 2 : SOCIOLOGY

2.1 What is Sociology, Indian family, Divorce.
2.2 Joint Family system, Muslim Marriages.
2.3 Types of families.
2.4 Forms of Marriage, Welfare services.
2.5 Social evils, Laws regarding Marriage and Inheritance.

Unit 3 : STITCHING AND MANAGEMENT

3.1 Sewing Machine its parts & care.
3.2 Types of Embroideries.
3.3 Principles of stitching, Ventilation.
3.4 Money, Expenditure, Budget.
3.5 Wants and Savings.

Unit 4 : HUMAN PHYSIOLOGY

4.1 Introduction to human body & skeleton system.
4.2 Blood, Circulatory system and Respiratory system.
4.3 Digestive System, Liver & Gall Bladder.
4.4 Urinary System & Reproductive System.
4.5 Organs of sense-eye, ear & skin.

Unit 5 : FOODS & HYGIENE

5.1 Proxmate principles of food.
5.2 Methods of cooking & balanced diet.
5.3 General Cleanliness.
5.4 Immunization.
5.5 Infectious diseases.

संगीत (सितार व गायन)

यूनिट 1: पारिभाषिक शब्दावली

स्वर, सप्तक, तारता, तीव्रता व गुण, शुद्ध स्वर, विकृत स्वर, श्रुतियाँ, शुद्ध स्वरों का आन्दोलन एवं तार पर शुद्ध स्वरों का स्थान। आलाप, तान, मुर्की, कण, कम्पन, मींड़, गमक, छूट, आरोह, अवरोह, पकड़, वादी–संवादी, अनुवादी, विवादी, अंश, न्यास, अल्पत्व–बहुत्व, चिकारी, खरज, तोड़ा, तिहाई, जमजमा।

यूनिट 2: राग–विज्ञान एवं वाद्य का ज्ञान

पूर्वराग–उत्तरराग, सन्धि प्रकाश राग, परमेल प्रवेशक राग, उत्तर और दक्षिण के संगीत में थारों का वर्गीकरण, व उससे रागोत्पत्ति, हिन्दुस्तानी और कर्नाटक पद्धतियों के स्वरों एवं श्रुतियों का तुलनात्मक अध्ययन, तानपुरा एवं सितार का अंग वर्णन एवं स्वर में मिलाने का ज्ञान।

यूनिट 3: गायन–वादन शैलियॉ

ध्रुपद, धमार, सरगम, लक्षणगीत, ठुमरी, तराना, भजन, त्रिवट, चतुरंग, रागमाला, होली, कठिन अलंकारों की रचना, मसीतखानी एवं रजाखानी गत।

यूनिट 4: इतिहास व जीवनियॉ

1. भारतीय संगीत का संक्षिप्त इतिहास
2. जीवनियॉ–शर्ङन्गदेव, तानसेन, अमीर खुसरो, भातखंडे, वि"णु दिगम्बर, गोपाल नायक।

यूनिट 5 : राग–ताल अध्ययन

1. निर्धारित रागों का शास्त्रीय अध्ययन।
2. छोटे स्वर समुदायों के आधार पर राग–पहिचान, निर्धारित रागः वृन्दावनी सारंग, भीमपलासी, भैरस, केदार, मालकोंस, जोनपुरी, दुर्गा, तिलक, कामोद, पूर्वी, हमीर, बहार।
3. निर्धारित तालों का शास्त्रीय अध्ययन।

4. छोटे तालांशों के आधार पर ताल–पहिचान, निर्धारित तालेंः दादरा, कहरवा, रूपक, दीपचन्दी, झपताल, एकताल, चौताल, धमार, धीमाताल।

संगीत (तबला)

यूनिट 1

पारिभाि"ाक शब्द–तिहाई, पेशकारा, टुकड़ा, मुखड़ा, परन, लय एवं लयकारी कायदा, पल्टा, संगीत, स्वर, ताल, ठेका, मात्रा, खाली, ताली, विभाग, सम।

यूनिट 2

विभिन्न प्रकार के संगीत वाद्य अपने वाद्य के विभिन्न अंगों एवं मिलाने का विशे"ा ज्ञान।

यूनिट 3

पाठ्यक्रम की तालों के विभिन्न लयों के साथ लयात्मक प्रकार ठेकों की कुछ बोलों के आधार पर तालों को पहचानने की योग्यता।

यूनिट 4

ठेकों (दिल्ली, बनारस आदि) के बाजों के प्रकार तालों के पेशकारा, टुकड़े, मुखड़े आदि के साथ लिपिबद्ध करने की योग्यता।

यूनिट 5

भारतीय संगीत का संक्षिप्त इतिहास, भारतीय संगीतज्ञः–शारंग देव, तानसेन, अमीर खुसरो, भातखण्डे, विष्णू दिगम्बर, गोपाल नायक।

पाठ्यक्रम की तालें– दादरा, कहरवा, रूपक, दीपचन्दी, तीनताल, झपताल, एकताल, चौताल, धमार, आड़ाचौताल, तीव्रा, सूलफाक, गजझम्पा, सवारी, खेमटा और मत्ततात।

POLITICAL SCIENCE

Unit 1

1.1 Meaning and Scope of Civics 1.2 Associations
1.3 Citizenship 1.4 Rights and Duties 1.5 Law

Unit 2

2.1 State-Meaning & Theories of Origin of State
2.2 Functions of State
2.3 Aristotle's classification of State
2.4 Unitary and Federal Government
2.5 Parliamentary and Presidential form of Government

Unit 3

3.1 Preamble and Salient Features of Indian Constitution
3.2 Fundamental Rights
3.3 Directive Principles of State Policy
3.4 President of India
3.5 Prime Minister of India

Unit 4

4.1 Central Council of Ministers
4.2 Vice-President of India
4.3 Central Legislative-Lok Sabha and Rajya Sabha
4.4 Relation between Centre and States
4.5 Supreme Court

Unit 5

5.1 High Courts 5.2 District Courts
5.3 Local Self Government 5.4 Democracy
5.5 U.N.O.

PSYCHOLOGY

Unit 1

1.1 Psychology-Meaning, Definition, Scope and Importance.

1.2 Methods of Psychology-Introspection, Observation (General and Therapeutic), Experimentation.

1.3 & 1.4 Response Mechanism-Central and Autonomic Nervous System, Reflex Actions, Localization of brain Functions.

1.5 Motivation-Importance in Behaviour, Innate and acquired Motives, Different approaches.

Unit 2

2.1 & 2.2 Emotions-Sensations and Emotions, Simple and Complex Emotional States, Repressed Emotions, Sympathy, Role of Emotions in experience and behaviour.

2.3 Mental Health-Meaning, Scope and Utility, Courses of Mental Illness, ways to cure and prevent.

2.3 Group Tension-Its increase, Casteism, Communalism, Religionism and Languageism in India, Ways of Eradication.

2.4 Delinquency-Causes, Social, Economic and Psychological.

2.5 Prevention or Delinquency-Reformatory Homes, Psychotherapy.

Unit 3

3.1, 3.2 & 3.3. Perception and Attention-Sensation, Gestalt theory of Perception, Role of Emotions in Perception and Illusions, Interest and Attention, Factors of Attention.

3.4 Imagination and Thinking-Images and Imagination, Types of Imagination, Nature of Thinking, Spearman's Law, Uses of concepts, Images, Symbols and Sign, Favourable and unfavourable conditions of thinking, Thinking and Suggestibility, Emotions.

3.5 Advertisement and Propaganda-Psychological factors.

Unit 4

4.1, 4.2 & 4.3 Memory-Retention, Levels of retention, Recall, Recognition, Favourable conditions of memorization, Laws of Association, Economic ways of memorization, Causes of Forgetting.

4.4 Personality-Meaning, Determinants, Heredity, Role of endocrine glands, Environment (Home, School and Society), Development of personality, Infancy, Childhood, Adolescene, Adulthood, Oldage.

4.5 Psychology in Industry-Conditions of work, Personnel Selection, Human Factors in Industry, Strikes and Lock outs.

Unit 5

5.1 & 5.2 Learning-Maturation and learning, Imitation, Theories of learning, Conditioning, Trial and Error, Thorndike's laws, Learning by insight, Learning curve, Initial spurt, Plateau, Physiological limit, favourable conditions of learning, Habit formation, Transfer of training.

5.3 & 5.4 Psychological test, Intelligence tests, Verbal, Non-verbal tests, Individual and group tests.

5.5 Guidance in India-Educational, Vocational, Personal, Guidance Service in U.P.

संस्कृत

यूनिट 1: वैदिक एवं लौकिक साहित्य

1.1 वेद एवं उपनि"ाद 1.2 रामायण एवं महाभारत 1.3 कालिदास

1.4 भास 1.5 बाणभट्ट एवं दण्डी।

यूनिट 2: प्रत्यय, कर्तवाच्य, प्रत्याहार, माहेश्वर सूत्र

2.1 क्त, क्तवतु, शतृ, शानच् 2.2 तुमुन्, अनीयर्, क्तवा, ल्यप्
2.3 ल्युट्, तृच्, टाप् ण्वुल 2.4 कर्तवाच्य, कर्मवाच्य, भाववाच्य
2.5 प्रत्याहार, माहेश्वर सूत्र।
यूनिट 3: शब्द रूप, धातु रूप
3.1 राम, हरि, गुरू, रमा, मति, नदी, धेनु, गृह, वारि, दधि, मधु
3.2 पितृ, भगवत्, करिन्, राजन्, वाच्, श्री, स्त्री, आप्, जगत्, नामन्
3.3 सर्व, तद्, यद्, किम्, युष्मद्, अस्मद्, इदम्, एतद्, अदस्
3.4 भू, पठ्, पा, गम्, दृश्, स्था, नी, अस्, शक्, पृच्छ कृ"ा
3.5 आत्मनेपद– लभ्, शी, विद्। अभयपद–नी, याच्, दा, ग्रह, ज्ञा, चुर्, श्रृ, कृ।
यूनिट 4: समास एवं सन्धि
4.1 तत्पुरू"ा, अव्ययीभाव, बहुव्रीहि 4.2 कर्मधारय, द्वन्द्व, द्विगु
4.3 स्वर सन्धि 4.4 व्यंजन सन्धि 4.5 विसर्ग सन्धि।
यूनिट 5: कारक एवं अनुवाद
5.1 कारक– प्रथमा व द्वितीया विभक्ति के सूत्र 5.2 तृतीया व चतुर्थी विभक्ति के सूत्र
5.3 पंचमी, "ा"ठी व सप्तमी विभक्ति के सूत्र 5.4 अनुवाद 5.5 अनुवाद।

SOCIOLOGY

Unit 1: BASIC CONCEPTS OF SOCIOLOGY
1.1 Sociology: Meaning and Scope.
1.2 Relation of Sociology with Economics & Psychology.
1.3 Society: Meaning and Characteristics, Difference between animal and human society.
1.4 Community & Social Group-Concepts.
1.5 Association & Institution-Meaning, Features.
Unit 2: SOCIAL CHANGE AND CONTROL
2.1 Social Change: Meaning & Features.
2.2 Factors of Social Change: Cultural, Economic and Geographical.
2.3 Impact of Urbanization and Industrialization on Indian Society.
2.4 Social Control: Meaning and Types.
2.5 Informal Agencies of Social Control, Family, Play Group, Religion, Customs & Traditions.
Unit 3: HINDU SOCIAL ORGANIZATION
3.1 Hindu Social Organization: Features.
3.2 Varna Vyavastha: Features and Significance in Traditional Society.
3.3 Caste System: Features.
3.4 Samskar: Meaning & Types of Major Samskars.
3.5 Ashram-Vyavastha: Importance.
Unit 4: SOCIAL DISORGANIZATION
4.1 Social Disorganization: Meaning and Features.
4.2 Crime: Meaning and Types.
4.3 Crime: Causes.
4.4 Juvenile Delinquency: Meaning & Causes.
4.5 Poverty and Unemployment: Meaning, Causes and Effects.
Unit 5: MAJOR SOCIAL INSTITUTIONS
5.1 Family: Nuclear and Joint, Meaning, Features & Importance in an Individual's life, Drawbacks of Joint Family System & Causes of its disintegration.
5.2 Marriage: Meaning & Types.
5.3 Dowry: Meaning and its Negative Role in Society.
5.4 Panchayati Raj: Meaning & Organization, Role of Panchayat in the

Past.

5.5 Co-operatives: Meaning and their Role in Rural Society.

SYLLABUS (GRADUATE LEVEL): SCIENCE

BOTANY

Unit 1: THALLOPHYTA

1.1 Algae	1.2 Fungi	1.3 Virus
1.4 Bacteria, Mycoplasma	1.5 Microbiology	

Unit 2: ARCHEGONIATAE

2.1 Bryophyta	2.2 Pteridophyta	2.3 Gymnosperm
2.4 Palaeobotany	2.5 General	

Unit 3: ANGIOSPERM

3.1 Taxonomy	3.2 Anatomy	3.3 Embryology
3.4 Economic Botany		

Unit4: ECOLOGY AND PHYSIOLOGY

4.1 Ecosystem, climate and Plant responce, Edaphic factor
4.2 Biotic inter-relationship, conservation, pollution
4.3 Photosynthesis, photosynthetic apparatus, mechanism
4.4 Biochemistry, hormones, vernalization, photoperiodism
4.5 Respiration, Enzymes.

Unit 5

5.1 Cytology	5.2 Genetics	5.3 Plant breeding
5.4 Cell biology	5.5 Nucleic acids.	

CHEMISTRY

Unit 1: GENERAL CHEMISTRY-I

1.1 & 1.2 Atomic Structure and Nuclear Chemistry: Discovery of electrons, protons, neutrons, Rutherford model, Bohr's model, Rydberg relationship, Binding energy, Shells, Subshells, Quantum numbers, Pauli's Exclusion principle, Hund's rule, Aufbau principle, Composition of the nucleus, nuclear forces, binding energy, group displacement law, rate of disintegration and half life, nuclear fission and fusion, Hazards of radiations uses of radioisotopes.

1.3 & 1.4 Chemical Bonding: (A) Ionic bond: Packing of ions in crystal, lattice energy, Born-Haber equation, Polarizing Power and polarizability, fajan's rule, hydration energy and (B) Covalent Bond: General characteristics, resonance, hybridization, sigma and pi bonds, bond energy, bond moment and dipole moments, L.C.A.O and M.O. theory, bonding, anti-bonding and non-bonding orbitals, M.O. configuration of simple diatomic molecules, Comparison of V.B. and M.O. theories.

1.5 Periodic Classification: Periodic classification and periodicity of elements, s, p, d and f block elements, the long form of periodic table including recent classification, periodicity in properties-a general consideration.

Unit 2: GENERAL CHEMISTRY-II

2.1 Gaseous State: Gas laws, Kinetic theory, Maxwell distribution law, Most probable, average and root mean square velocities of molecules. Principle of equipartition of energy, Molecular basis of heat capacity, Mean free path and collision frequencies, Real gases, Van der waals equation of state, implications of the Van der waals equation, Law of corresponding states and reduced equations of state.

2.2 Quantum Mechanics: Black-body radiation, heat capacities, photoelectric effect, the compton effect, the diffraction of electrons, de-Broglie equation, Heisenberg's uncertainity principle, postulates

of quantum mechanic, operators, normalization and orthogonality of wave functions, eigen value and eigen functions, Schrodinger equation to the free particle and particle in a box and their solutions, quantum numbers.

2.3 Spectroscopy: Rotational, Vibrational and Electronic Spectra.

2.4 Theory of Ionization: Strong and weak electrolytes, pH of acids and bases, pH Hydrolysis, acid base titration, acid-base indicator, common ion effect, buffer solutions, activity coefficient, Electrolytic and galvanic cells, reversible and irreversible cells, Nernst equation, Free energy of a cell reaction.

2.5 Solution: Raoult's Law and Henry's Law, Relative lowering of vapour pressure, Elevation in boiling point, depression in freezing point, osmotic pressure, Van't Hoff factor, abnormal molar mass.

Unit 3: INORGANIC CHEMISTRY

3.1 Group studies (s & p): Hydrogen, Trends in physical and chemical properties of the elements and their important classes of compounds of (a) s-block elements, Solvation (including liquid ammonia) complexation tendencies, anomalous behaviour and diagonal relationships, (b) p-block elements-Oxidation state diagrams on the basis of redox potential, inert pair effect and catenation, (c) d & f block elements Colour and spectral behaviour, Chemistry of Sc and Cu, magnetic behaviour, General study of the lanthanides & Actinides.

3.2 Principles or Metallurgy: (a) Chief modes of occurrence of metal, Principles of froth floatation, gravity separation and chemical leaching methods, Role of carbon and other reducing agents, Electrolytic reduction (b) Qualitative idea of free energy-temperature graphs, (c) Methods of purification and refining of metals, methods like zone refining and ion-exchange, Solvent extraction and electrolytic methods.

3.3. Aqueous and Non-aqueous solvents

Aqueous Chemistry: Introduction, conventions and units in aqueous solution chemistry, hydration of ions and solubilities of salts, ionisation of acids in aqueous solution, complex formation, formation constants of complexes.

Non-aqueous Chemistry: Study of solvents such as liquid ammonia and liquid SO_2, fluoro sulphuric acid, N_2O_4 and $POCl_3$, Coordination model of solute-solvent interaction in polar, protic and aprotic solvents.

3.4 Coordination Chemistry: Werner's theory, stereochemistry, isomerism in coordination complexes, field theories to explain bonding, magnetism, geometry and colour of coordination complexes, Stability, Determination of composition of complexes by spectrophotometry, calorimetric, pH-metric and conductometric methods and dipole.

3.5 Crystal field theory: John-Teller effect, thermodynamic effects of crystal field splitting, enthalpies of hydration for M^{2+} ion, lattice energies of MCl_2 compounds etc. Ligand field theory: Molecular orbital treatment of octahedral complexes and bonding MO's for tetrahederal and square planar complexes, Electronic spectra of transition metal complexes, general features, theoretical aspects of d-d spectra, selection rules, weak field splitting schemes, Orgel diagrams, selected examples of d-d spectra including mixed ligand systems e.g., Co(en) Cl_2 Cl_2 charge transfer effect.

Unit 4: PHYSICAL CHEMISTRY

4.1 Crystalline state: Types of bonding in solids, Law of constancy of angles, concept of unit cell, seven crystal systems, Bravais lattices,

law of rational indices, Miller indices, symmetry elements in crystals, point groups and 32 crystal classes.

4.2 Thermodynamics: First law of thermodynamics and internal energy, enthalpy, relation between C_p and C_v, calculation of w, q, dU and dH for expansion of an ideal gas, Joule-Thompson coefficient and inversion temperature, Standard states, standard enthalpy of formation, Hess's law of constant heat summation, enthalpy of solution, enthalpy of dilution, enthalpy of neutralisation, enthalpy of ionisation and enthalpy of formation of ions, Bond dissociation energies, Born-Haber cycle, Kirchhoff's equation, Spontaneous processes, Carnot's cycle, second law of thermodynamics, entropy, entropy changes of different processes, Clausius Clapeyron equation, chemical potential, Gibbs-Duhem equation, Variation of chemical potential With T and P and X.

ELECTROCHEMISTRY

4.3 Conductance: Conductivity and its measurements, Kohlraush law, Variation of molar conductivity with concentration of weak and strong electrolytes, Conductometric titrations, Transfer numbers, Determination using Hittorf's moving boundary methods, Application of conductance measurement for determining solubility and solubility products, degree of ionisation, ionic product of water and hydrolysis constant.

4.4 Chemical Kinetics and Photochemistry: Order and molecularity of a reaction, integrated forms upto second order only, methods of determination of order of a reaction, reaction mechanism, complex reactions, effect of temperature on reaction rate, Laws of photochemistry, quantum efficiency and its measurements, reasons of low and high quantum yields, photochemical excitation and photosensitization, Luminiscences.

4.5 Catalysis and Surface Chemistry: Homogenous and heterogenous catalysis, theories of catalysis, acid base catalysis, industrial application.

Adsorption: Types of adsorption, chemical and physical adsorption, Freundlich adsorption isotherm, Langmuir's adsorption isotherm, BET adsorption theory and isotherm, heat of adsorption, Gibbs adsorption equation.

Unit 5: ORGANIC CHEMISTRY

5.1 Hydrocarbons: Introduction, isomerism, synthesis, physical properties, chemical reactivity of (a) Alkanes and Cycloalkanes (b) alkenes (c) alkynes mechanism of free radical halogenations, Bayer's strain theory, Electrophilic addition reactions and their mechanism, Markownikoff's rule, peroxide effect, Polymerisation.

5.2 Aliphatic Compounds: Introduction, methods of synthesis, general properties, synthetic applications of alkyl halides, alcohols and ethers, aldehydes and ketones, carboxylic acids and their derivatives, Pinacol- pinacolone re-arrangement, nucleophilic addition reactions, Cannizaro's reaction, Mannich reaction, Reformatsky reaction, acidity of alpha hydrogen atom in carbonyl compounds, aldol condensation, Perkin's reaction, Knoevenagel reaction, mechanism of esterification and hydrolysis of esters, Alpha-beta unsaturated acids, Introduction to substituted acids, alpha-halo acids, alpha-hydroxy acids and amino acids, Introduction to carboxylic acid derivatives, methods of synthesis and relative reactivity of acid halides, amides and anhydrides.

Aliphatic amines: Nomenclalure, methods of preparation, separation of amines, general properties of ethyl/methyl amines, diethylamine.

5.3 Aromatic Compounds and aromaticity: Nomenclature and isomerism of aromatic compounds, synthesis, physical properties and chemical reactions of aromatic hydrocarbons, Phenols, aromatic halogen compounds, aromatic nitro amino and diazo compounds, aromatic acids and sulphonic acids.

5.4 Stereochemistry: Structure and configuration, geometrical isomerism, E and Z system of nomenclature, Optical isomerism, elements of symmetry and chirality, D and L nomenclalure, R and B system.

5.5 Carbohydrates and our food: Introduction, occurrence, classification, inter-relationship amongst monosaccharides, Interconversion of aldoses and ketoses, our food and its composition (Introductory idea of vitamin's, Carbohydrates, proteins, oils and fats).

MATHEMATICS

Unit 1: ALGEBRA

1.1 Convergence of Infinite Series with simple problems.
1.2 Matrices-Addition, subtraction, multiplication, division, Inverse and Rank with simple problems.
1.3 Linear Transformations.
1.4 Determinants, System of linear equations.
1.5 Modern Algebra-Binary operations, Definitions of Group, Ring, Integral domain, Field with Simple problems.

Unit 2: CO-ORDINATE GEOMETRY AND VECTOR ANALYSIS

2.1 Straight line, Plane, and Sphere.
2.2 Cone, Conicoids.
2.3 Vector, Vector and scalar products, scalar triple products.
2.4 Differentiation and Integration of vectors.
2.5 Gradient of Scalar, Divergence and Curl, their physical interpretation and simple problems.

Unit 3: TRIGONOMETRY, DIFFERENTIAL & INTEGRAL CALCULUS

3.1 Hyperbolic functions related to circular function.
3.2 Successive Differentiation, Leibnitz's, Taylor, Maclaurin's Theorems.
3.3 Partial differentiation, simple problems on Asymptotes, curve tracing.
3.4 Definite Integral, Beta (β) and Gamma (γ) functions.
3.5 Double Integral.

Unit 4

4.1 Methods for solving differential equations of first order and first degree (variable separable, linear, exact).
4.2 Simple second order differential equations.
4.3 Strings in two dimensions, Forces in three dimensions.
4.4 Kinematics, Rectilinear motion, Motion in a plane.
4.5 Moment of Inertia, D' Alembert's principle.

Unit 5: STATISTICS

5.1 Graphical representation of data, Measures of central tendency.
5.2 Measure of variability.
5.3 Binomial distribution of Poisson Normal distribution.
5.4 Correlation Probability.
5.5 Probability correlation and Regression.

PHYSICS

Unit 1: MECHANICS, RELATIVITY & THERMAL PHYSES

1.1 Frames of Reference and Special Theory of Relativity: Intertial and Non-Inertial Frames of Reference, Galilean

Transformation, Michelson-Morley Experiment, Lorentz Transformation, Length Contraction and Time Dilation, Conservation of momentum, variation of mass.

1.2 Dynamics of Particles in a conservative Field and Dynamics of Rigid Bodies: Conservative Force Field, Planetary Motion, Gravitational Field and Potential, Reduced Mass, angular momentum of a system with centre of mass, Theorems of Moments of Inertia, Calculation of M.I. of different bodies at different axes.

1.3 Viscosity, Elasticity and Harmonic Oscillator: Streamlined and Turbulent flow, Row of liquid through capillary tubes, Stoke's formula, Definition of Elastic Constants and their relation, Bending of beam, Hamonic Oscillator, Damped Harmonic Oscillator, Vibrational states of diatomic molecules.

1.4 Equation of State and Kinetic Theory of Gases: Perfect Gas Equation, Virial Coefficients, Vander Waal's equation, Zeroth law of thermodynamics, Law of equi-partition of energy, Kinetic Theory of Transport Phenomena, Conductivity, Viscosity and Diffusion.

1.5 First & Second Law of Thermodynamics & Thermal radiation: Reversible & Irreversible Processes, Carnot engine, Entropy and its physical significance, Disorder, Maxwell's Thermodynamical Relations and their applications, Claussius-Clayperon Latent Heat Equation, Specific heat equation, Joule-Thomson effect and liquefaction of gases, Energy density of diffuse radiation, Stefan's, Wien's laws and Rayleigh-Jean's law.

Unit 2: ELECTRICITY, MAGNETISM & ELECTRONICS

2.1 Electric Charge, Electrostatic Field and Potential: Coulomb's law in vector form, Gauss's Law and its applications, Gauss's Divergence Theorem, Line integral of Electric Intensity, Electric Potential and its Calculation, Method of Electrical images, energy stored by a charged condenser, capacity of different types of capacitors.

2.2 Electric fields in matter and varying Current: Polar and non-polar molecules, Induced dipole moment, atomic polarisability, electric susceptibility and electric polarisation, Equation of Continuity, Lorentz- Drude Theory of Conductivity, Charging and discharging of Condenser through resistance, Growth and decay of current in L-C-R circuit.

2.3 Alternating Current: I-V relations in case of resistance, inductance and capacitance, phasor algebra, Theory of Choke Coil, L-C-R circuits, Power in a.c. circuits, Series and Parallel resonance.

2.4 Electro-magnetism: Ampere's circuital law, Curl and Div. of Magnetic Flux, Torque on a current loop in a uniform magnetic field, Universal law of inductance (VxE=-dB/dt), Mutual Induction, Reciprocity Theorem ($M_{12}=M_{21}$), Magnetic Properties of materials, J = Curl M, Ferro, para, and dia-materials, antiferro magnetism and Ferro magnetism, Ferrites, Hysteresis and practical applications.

2.5 Electronics: Semi-conductors, n, p type on the basis of Band Theory, Semi conductor diodes, characteristics, diode equations, applications to rectification, Concept of Zener Diodes, pnp, npn transistors and their characteristics, current relationships, application as an Amplifier, Operational Amplifier, concept of feed-back, open/closed loop gain, inverting, non-inverting amplifier.

Unit 3: OPTICS

3.1 Geometrical Optics: Cardinal points of a Coaxial lens system, Nodal points, Newton's formula, Eye-pieces: Huygens and Ramsden's eyepieces.

3.2 Interference: Coherent Sources, analytical theory of interference

fringes, Fresnel's Biprism, Interference by reflected and transmitted light in a thin film, colours of thin films, Interference in a wedge shaped film, Newton's Rings, Michelson's interferometer.

3.3 Diffraction: Half period zones, zone plate, diffraction at a Circular aperture, half period strips, diffraction at a straight edge, Fraunhofer's class-Composition of n simple harmonic waves of equal amplitude, Single Slit, Double Slit, Plane Diffraction grating, Dispersive Power of Grating.

3.4 Polarisation of Light: Production of Plane polarised light, Brewster's law, law of Malus, Uniaxial and Biaxial crystals, Double Refraction, Nicol prism.

3.5 Production and Analysis of Polarised light: Plane, circularly and elliptically polarised light, production and analysis, quarter-and Half-wave plates and their uses, Fresnel's Theory of optical rotation, specific rotation, and molecular rotation, Rotatory dispersion polarimeters.

Unit 4: ATOMIC AND NUCLEAR PHYSICS

4.1 Quantum Nature of Radiation and Atomic Models, Photo electric effect, Einstein's Theory, Compton effect and its experimental verification, Matter waves, Davisson and Germer experiment, Schrodinger wave equation, Uncertainty principle, Bohr's Atomic Model, Bohr's quantum conditions from de Broglie's Hypothesis, Resonance, Excitation and Ionisation potentials, Sommerfeld's relativistic model.

4.2 Vector Atom Model: Electronic structures in spectra of Hydrogen, deuteron and alkali atoms spectral terms, Doublet Fine structure, Screening constants for alkali spectra for s, p, d, f states, selection rules.

4.3 X-rays and Scattering: Continuous x-ray spectra and its dependence on voltage, Moeley's law, Doublet structure of x-ray spectra, x-ray absorption spectra, Duane & Hunt's law, Bragg's Law, Rayleigh's scattering, Raman scattering, Raman-Nath formula.

4.4 General Properties of Nuclei and Radio activity: Nuclear spin, parity, iso-spin, angular momentum, Binding Energy, Packing Fraction, Semi-empirical Mass formula, Alpha-rays, range-energy relation, Geiger-Nuttal relation, Beta and Gamma spectra, age of rocks and Carbon dating.

4.5 Neutron, Detectors, and Nuclear Fission: Neutrons, discovery and detection, accelerators, Detectors, Ionisation Chambers, Solid state Detectors, GM counter, nuclear Fission-liquid drop model, nuclear reactors, reactors in India, Cosmic rays-origin and Cosmic ray showers.

Unit 5: SOLID STATE PHYSICS

5.1 Crystal structure: Crystalline and amorphous materials, crystal classes and systems, lattice translation vectors, Bravais' lattice, Unit cell, Miller indices, Interplanar spacing between lattice planes for cubic lattice, Density of lattice points in lattice plane, liquid crystals and glasses, x-ray diffraction techniques.

5.2 Elementary Lattice Dynamics: Lattice Vibrations, linear monoatomic and diatomic chains, acoustical and optical phonons, phonon spectra in solids, Brillouin Zones, cut-off frequency, phase and group velocity, density of states, transverse waves.

5.3 Thermal Properties: Lattice specific heats, classical Theory, Einstein's, Debye's Theory of specific heat, thermal expansion.

5.4 Free Electron Theory of Metals: Mobility, thermal conductivity, Drude model, electrical conductivity, Weidemann-Franz-Lorentz relation, Hall effect.

5.5 Semi-conductors: Elementary Band Theory of Solids (Qualitative), metals, insulators, semi-conductors, Intrinsic and Extrinsic Semi conductors, Carrier concentration, Expression for Fermi Level, quantitative discussion of variation of Fermi levels with n_d and n_T, conduction in Semi-conductors, electrons and holes, mobility, intrinsic and extrinsic semi-conductors, donor and acceptor impurity levels, Fermi function and Fermi energy.

ZOOLOGY

Unit 1: CLASSIFICATION AND INVERTEBRATA

1.1 Introduction to animal kingdom, Modern, classification of animals upto orders, Protozoa-Paramecium, Euglena, Trypanosoma (structure, reproduction and life history).
1.2 Porifera-Sycon-structure, physiology, canal system and life history, Coelenterata: Obelia-structure and life history.
1.3 Platyhelminthes: Life history, biology and bionomics of (a) Fasciola (b) Taenia. Aschelminthes: Ascaris.
1.4 Annelida: structure and reproduction, Arthropoda: Life history and bionomics of (a) Mosquito (b) House fly (c) Honey bee.
1.5 Mollusca: Pila and unio-structure and reproduction, Echinodermata, Star fish-morphology and water vascular system.

Unit 2: MORPHOLOGY AND ANATOMY

2.1 Protochordata: Balanoglossus, Urochordata: Herdmania, Cephalochordata: Branchiostoma.
2.2 Pisces: Scoliodon
2.3 Amphibia: Frog
2.4 Reptiles: Uromastix, Aves: Columba
2.5 Mammalia: Rabbit.

Unit 3: CELL & MOLECULAR BIOLOGY

3.1 Cytology: Cell structure and function.
3.2 Molecular Biology: Nucleic acid structure and function.
3.3 Microbiology: Bacteria-morphology and anatomy
3.4 Bacterial reproduction: Transformation, transduction and conjugation.
3.5 Viruses: Morphology, bacteriophage

Unit 4: PHYSIOLOGY

4.1 Digestion and vitamins
4.2 Nervous system
4.3 Circulatory system
4.4 Excretion
4.5 Endocrine system.

Unit 5: EVOLUTION, GENETICS AND ECOLOGY

5.1 Evolutionary biology: Chemical evolution theory, Darwinism, Lamarckism and Speciation.
5.2 Genetics: Mendel's laws, linkage, crossing over, sex-determination, mutation and human syndromes.
5.3 Genetic engineering.
5.4 Biotic and abiotic factors, ecosystems.
5.5 (a) Population (b) Community (c) Adaptations.

SYLLABUS (GRADUATE LEVEL): COMMERCE

COMMERCE

Unit 1

1.1 Accountancy: Royalty Accounts, Hire Purchase & Instalment Payment System, Insolvency Accounts, Branch Accounts, Partnership Accounts, Company Accounts, Accounts of Banking Companies & General Insurance Companies.

1.2 Corporate Accounting: Amalgamation, Absorption, Reconstruction, and Liquidation of Companies, Holding & Subsidiary Companies, Valuation of Shares & Goodwill, Accounts of Electric & Water Supply Companies.

1.3 Income Tax: Definitions, Residential Status, Incidence of Tax & Exemptions from tax, Income under different heads, Assessment of Individual & Tax liability.

1.4 Commercial Law: Contract Act, Sale of Goods Act, Indian Partnership Act, Negotiable Instrument Act, Arbitration Act.

1.5 Insurance Law: Origin & Development, Functions & Importance of Insurance, Marine, Fire, Life & Other Insurances.

Unit 2

2.1 Cost Accounts & Control: Elements & Classification of Cost, Inventory Control, Wage Payment Systems, Classification of Overheads, Unit Costing, Contract Account, Process Accounts, Reconciliation Statement, Marginal Costing, Cost Reduction & Cost Control, Cost Audit & Reporting.

2.2 Company Law: Characteristics, Types of Company, its formation & Documents, Privileges & Concessions of a Private Company, Share Capital & Borrowings, Directors, Meetings, Resolutions, Winding up.

2.3 Auditing: Origin, Objects, Advantages & Classes of Audit, Audit Programme, Audit Note Book & Auditors Working Papers, Internal Check & Internal Audit, Audit of Company Accounts, Valuation & Verification, Depreciation, Provisions & Reserves, Auditors: Qualifications, Appointment, Remuneration, Removal, Rights, Duties & Liabilities, Auditor's Reports.

2.4 Statistics (Elementary): Definition, Scope, Limitation, Functions & Importance of Statistics, Collection, Classification & Tabulation of Data, Statistical Errors, Law of Statistics, Regularity & Statistical Inquiry, Diagrammatic & Graphic Representation of Data, Measure of Central Tendency & Dispersion, Correlation, Index Numbers.

2.5 Statistics (Advanced): Interpolation & Extrapolation, Simple Linear Regression, Analysis of Time Series, Forecasting, Association of Attributes, Chi-Square Test, Probability.

Unit 3

3.1 Principles of Economics: Definition, Scope of Economics, Methods of Economic Study, Micro & Macro Analysis, Economic Laws, Law of Marginal & Equilibrium Marginal Utility, Consumer Surplus, Indifference Curve, Law of Demand & Supply, Elasticity of Demand & Supply, Theory of Production: Efficiency of Land, Labour & Capital, Law of Returns, Theories of Population, Economic System: Capitalism, Socialism, Mixed Economy, Theory of Product Pricing-Different Market Situations, Equilibrium of Demand & Supply, Effect of Change in Demand & Supply & Time element in the theory of value, Pricing Decisions: Cost & Revenue Analysis, Equilibrium of Firm, Pricing under perfect, monopoly & monopolistic competition, Price discrimination, National Income & its

measurement, Theories of Distribution, Theories of Rent, Wages, Interest & Profit, Employment & Trade Cycle.

3.2 Public Economics: Public Finance-Role of Public Finance in National Economy & Doctrine of Maximum Social Advantage, Public Expenditure, Public Revenues, Canons of Taxation, Types of Taxes, Incidence & Impact of Taxation, Taxable Capacity, Public Debt, Loan vs Taxes, Financial Administration, Sources of Revenue of Central, State & Local Bodies, Budgetary Procedure, Deficit Finance.

3.3 Indian Economy: Factor influencing Economic Development, Characteristics of Indian Economy, National Resources: Forest, Minerals, Power, Manpower Resources & Population problem & policy, Indian Agriculture: Features, Importance, Causes of Low Productivity, Agriculture Marketing & Co-operation in Agriculture, Cottage & Small Scale Industries, Industrial Policy, Large Scale Industries: Iron & Steel, Cotton Textile, Sugar & Cement.

3.4 Economic Planning in India: Scope, Significance, Object & Pre-requisite of Successful Plan, Types of Planning, Planned and Unplanned Economies, Importance & Problem of Planning in under developed Countries, Economic Planning in India, Five Year Plans-Aims, Resources, Target & Achievement.

3.5 Managerial Economics: Scope, Role and Responsibility of Managerial Economist, Demand Analysis & Demand Forecasting, Cost Analysis, Economies & Diseconomies of the Scale, Pricing & Output Decisions Under Monopoly, Monopolistic and Oligopoly, Pricing Methods & Price Discrimination, Measurement of Profit, Profit Policy & BEP Analysis, Capital Budgeting.

Unit 4

4.1 Money, Currency & Foreign Exchange: Money-Functions, Importance & Classification, Monetary Standard, Value of Money, Quantity Theory of Money, Measurement of Change in Value of Money, Inflation-Types, Causes & Effects, Credits-Forms, Credit Creation & Role of credit in developing Economy, Foreign Exchange-Importance, Mechanism of Foreign Payments, Determination of Exchange Rates, Balance of Payment, Exchange Control.

4.2 Banking & Finance: Banks-Types, Importance, Functions, Sources & Employment of Bank Funds, Securities against Advances, Central Banking, Credit Creation by Bank, Indian Money Market, Nationalisation of Commercial Banks, Indian Banking: Co-operative & Exchange Banks, SBI, RBI, Institute for Industrial Finance in India & International Financial Institutions.

4.3 Financial Management: Significance, Scope & Object, Financial function, Responsibility of Financial Manager, Capitalisation-Over & Under Capitalization, Capital Structure-Qualities & Determinants, Sources of Long Term Finance-Ownership & Creditorship Securities, Sources of Long Term & Short Term Finance in India, Working Capital-Importance, Determinants & Adequacy of Working Capital.

4.4 Business Organization: Importance, Forms of Business Unit, Location & Size of Business Unit, Industrial Finance-Sources & Institutions, Production-Purchasing, Store keeping, Inventory Control, Organization, Planning & Controlling Production, Scientific Management & Rationalization, Advertisement, Stock & Produce Exchange, Business Combinations.

4.5 Principles of Management: Definition, Nature, Importance, Objectives, Social Responsibilities, Universality of Management, Professional Management in India, Planning, Organizing, Directing, Management Control.

Unit 5

5.1 Personnel Management: Concept, Scope, Objectives, Importance, Functions, Developments of Personnel Management in India, Personal Policies & Programme, Employment & Development of Personnel, Wages & Salary, Administration, Human Relation.

5.2 Marketing Management: Nature, Scope, Concept, Importance & Functions of Marketing, Consumer Behaviour & Policies, Attitudes & Preferences, Product Planning-Product Line, Product Life Cycle, Product Development, Branding & Packaging, Channels of Distribution, Marketing Research.

5.3 Sales Management: Sales Organization-Meaning, Principle, Forms, Functions, Importance, Sales Manager-Role, Qualities, Duties, Functions, Types & Relation with Consumer, Public Competition & Staff Salesman, Supervision, Sales Policies, Salesmanship.

5.4 Secretarial Management: Company Secretary-Rights, Duties & Appointment, Transfer & Transmission of Shares, Calls & Forfeiture of Shares, Dividends, Chairman, Company Meetings, Minutes, Issue of Shares & Debentures.

5.5 Industrial Law: Factories Act 1948, Trade Union Act 1926, Industrial Disputes Act 1947, Payment of Wages Act, Employees State Insurance Act, Workmen's Compensation Act.

SYLLABUS (GRADUATE LEVEL): ARTS

चित्रकला

यूनिट 1 : प्रागैतिहासिक काल

1.1 प्रागैतिहासिक काल का प्रारम्भ 1.2 प्रागैतिहासिक शैल चित्र

1.3 मोहनजोदड़ो की सभ्यता 1.4 हड़प्पा की सभ्यता

1.5 जोगीमारा गुफा

यूनिट 2: बौद्ध काल

2.1 बौद्ध काल का प्रारम्भ 2.2 अजन्ता गुफा

2.3 सिगिरिया गुफा 2.4 बाघ गुफा

2.5 एलोरा गुफा

यूनिट 3: मध्यकाल व मुगलकाल

3.1 मध्यकाल का प्रारम्भ 3.2 पाल व अपभ्रंश

3.3 मुगल काल का प्रारम्भ व पतन 3.4 अकबर कालीन मुगल कला

3.5 जहाँगीर कालीन मुगल कला

यूनिट 4: राजपूत काल

4.1 राजपूत कला का प्रारम्भ 4.2 मेवाड़ – उदयपुर, नाथद्वारा

4.3 मारवाड़ – जोधपुर, बीकानेर, किशनगढ़ 4.4 हाड़ोती – कोटा, बूँदी

4.5 ढूढाँड़ – जयपुर, अलवर

यूनिट 5: पुनर्जागरण काल, अन्य स्कूल व अन्य भारतीय कलाकारों का जीवन परिचय

5.1 पुनर्जागरण काल का प्रारम्भ 5.2 राजा रवि वर्मा, पटना शैली

5.3 बंगाल स्कूल का प्रारम्भ, अवनीन्द्र नाथ ठाकुर, नन्दलाल बोस, असित कुमार हल्दर, क्षीतिन्द्र नाथ मजूमदार

5.4 रवीन्द्र नाथ ठाकुर, गगेन्द्र नाथ ठाकुर 5.5 अमृता शेरगिल, यामिनी राय

ECONOMICS

Unit 1: NATIONAL INCOME ACCOUNTING

1.1 National Income Analysis, Concepts of National Income.
1.2 Computation of National Incomes & its difficulties.
1.3 National Income at Current and Constant Prices.
1.4 Average & Marginal Propensity to Consume.
1.5 Theories of Consumption Function.

Unit 2: PRICE THEORY

2.1 Law of demand and elasticity of demand.
2.2 Utility analysis and Indifference curve techniques.
2.3 Cost curves & their relationships.
2.4 Equilibrium of a firm under different market conditions.
2.5 Pricing of factors of production.

Unit 3: MONEY, BANKING, INTERNATIONAL TRADE & PUBLIC FINANCE

3.1 Money-Definition, Functions, Demand for money and quantity theory of money.
3.2 Credit & Financial system, Control of Credit.
3.3 Comparative Cost theory of International Trade, Balance of Payments.
3.4 India's Tax Structure, Fiscal Policy & Latest Budget of India.
3.5 Export-lmport Policy of India.

Unit 4: STATISTICS & QUANTITATIVE TECHNIQUES STATISTICS

4.1 Measurement of Central Tendency-Mean, Median, Mode.
4.2 Correlation & Simple Regression.
4.3 Index Number.

Mathematics

4.4 Determinants & Matrices.
4.5 Linear & Differential Equations.

Unit 5: INDIAN ECONOMY

5.1 Indian Agriculture since Independence with reference to Food Problem.
5.2 Indian Poverty & Population, Population Policy, Employment programmes.
5.3 Strategy of lndian planning.
5.4 Problems of Industrialization in India.
5.5 New Economic Reforms.

ENGLISH

Unit 1: GRAMMAR

1.1 Active Passive
1.2 Common error in English
1.3 Direct Indirects
1.4 Transformation-Simple, Complex, Compound
1.5 Synthesis of Sentences

Unit 2: VOCABULARY, FIGURES OF SPEECH, IDIOMS, PHRASES, COMPREHENSION

2.1 Synonyms, Antonyms, one word substitutions
2.2 Figures of Speech 2.3 Idioms
2.4 Phrases 2.5 Comprehension

Unit 3: SHAKESPEARE & OTHER RENAISSANCE WRITERS

3.1 His Life
3.2 Tragedies (Macbeth, Othello)
3.3 Roman Plays (Julius Caesar)
3.4 Comedies (As you like it)
3.5 Milton & Spenser

Unit 4: NEO-ROMANTIC POETS

4.1 Wordsworth
4.2 P.B. Shelley
4.3 S.T. Coleridge
4.4 Keats
4.5 Byron

Unit 5: NOVELISTS & POETS OF VICTORIAN PERIOD

5.1 Lord Tennyson
5.2 Mathew Arnold
5.3 Robert Browning
5.4 Charles Dickens
5.5 Thomas Hardy.

GEOGRAPHY

Unit 1

1.1 Geography-its Meaning, Importance and Scope.
1.2 Origin of Earth, Theories regarding its Origin, Structure of earth and interior of earth.
1.3 Change of Seasons, Day and Night.
1.4 The Continents.
1.5 Oceans and Ocean Currents.

Unit 2

2.1 Rivers and various stages of rivers.
2.2 Volcanoes, Earthquakes, Vertical and horizontal earth movement.
2.3 Different Types of Rocks and Soils, Classification of Soils and World distribution.
2.4 Functions of Winds.
2.5 Glaciers and mountain building.

Unit 3

3.1 Regional Geography of Asia.
3.2 Special study of India.
3.3 Regional Geography of Europe.
3.4 Regional Geography of North America.
3.5 Regional Geography of Africa.

Unit 4

4.1 Concept of Human Geography and its Aims.
4.2 Place of Human Geography in the Social Sciences.
4.3 Man and his Environment.
4.4 Study of Life Style of Bushmen, Pygmies and Eskimos.
4.5 Ecosystem and energy flow, ecological balance and Impact of man on Ecosystem.

Unit 5

5.1 Agricultural products, Classification of Crops.
5.2 Industries.
5.3 Forests.
5.4 Minerals.
5.5 Petroleum and Oil Refineries.

हिन्दी

यूनिट 1: हिन्दी साहित्य का इतिहास (वीरगाथाकाल, भक्तिकाल)

1.1 हिन्दी साहित्य के इतिहास लेखन की परम्परा, हिन्दी साहित्य का काल विभाजन

1.2 वीर गाथा काल – प्रवृत्तियाँ, प्रमुख कवि तथा रचनाएँ

1.3 भक्तिकाल की सामान्य प्रवृत्तियाँ

1.4 भक्तिकाल की निर्गुण काव्यधारा – प्रमुख कवि, रचनाएँ तथा प्रवृत्तियाँ
1.5 भक्तिकाल की सगुण काव्यधारा – प्रमुख कवि, रचनाएँ तथा प्रवृत्तियाँ।
यूनिट 2: हिन्दी साहित्य का इतिहास – रीतिकाल तथा आधुनिक काल
2.1 रीति काल – नामकरण, सीमांकन तथा साहित्य
2.2 रीति कालीन काव्य की प्रमुख प्रवृत्तियाँ, कवि तथा रचनाएँ
2.3 भारतेन्दु युग, द्विवेदी युग – प्रमुख कवि, रचनाएँ तथा प्रवृत्तियाँ
2.4 छायावाद, प्रगतिवाद– प्रमुख कवि, रचनाएँ तथा प्रवृत्तियाँ
2.5 प्रयोगवाद, नयी कविता – प्रमुख कवि रचनाएँ तथा प्रवृत्तियाँ ।
यूनिट 3: हिन्दी गद्य साहित्य का विकास
3.1 हिन्दी गद्य – उद्‌भव और विकास
3.2 निबंध और आलोचना
3.3 नाटक एवं एकांकी
3.4 उपन्यास एवं कहानी
3.5 गद्य की अन्य नवीन विधाऐं–रेखाचित्र, संस्मरण, आत्मकथा, रिपोर्ताज, भेंटवार्ता, यात्रा साहित्य ।
यूनिट 4: काव्य शास्त्र
4.1 रस – रस सामग्री, रसनि"पत्ति एवं रस के भेद उदाहरण सहित
4.2 अलंकार – शब्दालंकार, अनुप्रास, यमक, श्ले"ा, वक्रोक्ति
अर्थालंकार– उपमा, रूपक, प्रतीप, व्यतिरेक, उत्प्रेक्षा, अपन्हुति, भ्रांतिमान, सन्देह, दीपक, अन्योक्ति, समासोक्ति, विभावना, विशे"ोक्ति, दृ"टान्त, अर्थान्तरन्यास, विरोधाभास
4.3 शब्दशक्ति
4.4 गुण और दो"ा
4.5 छन्द– दोहा, सोरठा, चौपाई, रोला, कुण्डलियाँ, छप्पय, कवित्त, सवैया ।
यूनिट 5: व्याकरण
5.1 सन्धि, समास, उपसर्ग, प्रत्यय
5.2 लोकोक्ति तथा मुहावरे
5.3 विपरीतार्थक शब्द, समानार्थक शब्द, वाक्यांश के लिए एक शब्द, शब्द युग्म
5.4 पद – संज्ञा, सर्वनाम, क्रिया, विशे"ाण
5.5 हिन्दी शब्द समूह – तत्सम्, तद्‌भव, देशज तथा विदेशी शब्द।

HISTORY

Unit 1: ANCIENT INDIAN HISTORY
1.1 Stone Age and sources of Indian History.
1.2 River Valley Civilization-Sindhu
1.3 Vedic Civilization
1.4 Civilization of the Epic (Ramayana & Mahabharta) age
1.5 Religious movements of 6th century B.C. (Jainism & Buddhhism).
Unit 2: HINDU PERIOD
2.1 Mauryan Period 2.2 Gupta Period
2.3 Kushan Period 2.4 Vardhan Rulers 2.5 Rajput Period.
Unit 3: MEDIEVAL PERIOD
3.1 Slave Dynasty 3.2 Khilji Dynasty
3.3 Tuglaq Dynasty 3.4 Saiyyad Dynasty 3.5 Lodi Dynasty.
Unit 4: MUGHAL PERIOD

4.1 Babar, Humayun and Shershah Suri 4.2 Akbar
4.3 Jahangir 4.4 Shahjahan
4.5 Aurangzeb and down fall of Mughal Empire.

Unit 5: MODERN PERIOD
5.1 East India Company's Rule
5.2 First war of Independence 1857
5.3 National Movement of India: (i) Non-Violence Movement, (ii) Quit India Movement
5.4 Acts of 1919 and 1935
5.5 Independence Act, 1947 and Indian Constitution.

HOME SCIENCE

Unit 1: TEXTILES
1.1 Manufacture of Fibres and Fabrics 1.2 Finishes
1.3 Characteristics of different Fibers 1.4 Yarns and Weave
1.5 Dying & Printing.

Unit 2: FOODS & NUTRITION
2.1 Proximate principles 2.2 Minerals
2.3 Vitamins 2.4 Methods of Cooking
2.5 Functions of food.

Unit 3: HOME MANAGEMENT
3.1 Steps in Home Management Values, Goals and Decision Making
3.2 Work simplification, Kitchen plans and Family life cycle
3.3 Money Management, Fatigue, Energy Management
3.4 Metal cleaning, Household Equipments and Ventilation
3.5 Elements of Art, Principles of Design, Flower arrangement, Interior Decoration.

Unit 4: HUMAN DEVELOPMENT
4.1 Heredity, Ovulation, Fertilization
4.2 Parental development, Types of birth, Reflexes of neonate, Principle of development
4.3 Care of neonate, Play, Introduction to early childhood, Guidance & counselling
4.4 Aims & Importance of parent education, Needs of children, Parental attitudes
4.5 Importance of community for welfare the child, Importance of home-school relationship, Teaching aids for parent education, Welfare institution.

Unit 5: PHYSIOLOGY
5.1 Skeleton & Muscular System
5.2 Digestive System
5.3 Excretory & Respiratory Systems
5.4 Circulatory System
5.5 Nervous System & Receptors.

संगीत (सितार व गायन)

यूनिट 1

1.1 संगीत की परिभा"ा, भारतीय संगीत की विशे"ताऐं, ध्वनि व कम्पन।

1.2 प्राचीन, मध्य व आधुनिक कालीन श्रुति–स्वर, विभाजन ।

1.3 निम्नाँकित पारिभाषिक शब्दों की व्याख्याः नाद, श्रुति, स्वर, हार्मनी, मैलॉडी, संवाद, विसॅवाद, तारता, तीव्रता व गुण, लय, मात्र, ताल, लयकारी।

1.4 राग यमन कल्याण, बागेश्री, बिहाग, अल्हैया बिलाबल व रामकली का शास्त्रीय अध्ययन, राग पहिचान ।

1.5. तीन ताल, झपताल व चार ताल की दुगुन, तिगुन, चौगुन व आड़।

यूनिट 2

2.1 सौन्दर्य, कला एवं सौन्दर्य, संगीत एवं सौन्दर्य, देशी व मार्गी संगीत, ग्राम, मूर्च्छना, जाति गायन।

2.2 आलाप का स्वरस्थान नियम, रागालाप, रूपकालाप, आलप्ति गान, राग लक्षण, शुद्ध, छायालग, संकीर्ण राग, अल्पत्व–बहुत्व, आर्विभाव–तिरोभाव ।

2.3. रागों का विकास एवं वर्गीकरण, जाति, ग्राम राग, राग–रागिनी, रागांग, थाट मेल, तानों के प्रकार।

2.4. शंकरा, जैजैवंती, गौड़–सारंग व पूरियाधनाश्री रागों का शास्त्रीय अध्ययन व राग–पहिचान।

2.5. ताल रूपक व धमार की दुगुन, तिगुन, चौगुन व आड़।

यूनिट 3

3.1. संगीत की उत्पत्ति–भारतीय व विदेशी मत, वैदिक युगीन संगीत–वैदिक स्वरों का विकास, साम गायन विधि, साम–विकार।

3.2. रामायण व महाभारत कालीन संगीत।

3.3. मुगल कालीन व ब्रिटिश कालीन संगीत, स्वतन्त्रयेतर काल में संगीत।

3.4. निम्नांकित ग्रन्थों का सामान्य अध्ययनः भरत का नाट्यशास्त्र, संगीतरत्नाकर, बृहदेशी, संगीत–दर्पण, संगीत पारिजात, अभिनव राग मंजरी।

3.5. जीवनियाँः अमीर खुसरो, मानसिंह तोमर, स्वामी हरिदास, तानसेन, सदारंग, अदारंग, शोरी मियाँ, सुल्तान हुसैन शर्की, वि"णु दिगम्बर भातखण्डे, त्यागराज, अलाउददीन खाँ।

यूनिट 4

4.1 हिन्दुस्तानी व कर्नाटक संगीत पद्धतियों का तुलनात्मक अध्ययन।

4.2 भातखण्डे व वि"णु दिगम्बर स्वर लिपि पद्धतियों का तुलनात्मक अध्ययन।

4.3 पाश्चात्य स्वर लिपि (स्टाफ) पद्धति का सामान्य अध्ययन।

4.4 गायन व वादन (सितार) के विभिन्न घरानों व उनकी विशेषताओं का अध्ययन ।

4.5 लोक संगीत व शास्त्रीय संगीत का तुलनात्मक अध्ययन।

यूनिट 5

5.1 अ– राग मियॉ मल्हार, गौड़ मल्हार, दरबारी कागड़ा व अड़ाना का शास्त्रीय अध्ययन।
ब– उक्त रागों की स्वरांकन से पहिचान ।

5.2 अ– राग कामोद, छायानट, रागेश्री व मालगुंजी का शास्त्रीय अध्ययन।
ब– उक्त रागों की स्वरांकन से पहिचान ।

5.3 अ– राग तोड़ी मुल्तानी, सोहिनी व पूरिया का शास्त्रीय अध्ययन।
ब– उक्त रागों की स्वरांकन से पहिचान।

5.4 अ– राग बसन्त, परज, श्री व ललित का शास्त्रीय अध्ययन।
ब– उक्त रागों की स्वरांकन से पहिचान।

5.5 अ– निम्नांकित तालों का शास्त्रीय अध्ययन :–

आड़ा चारताल, निलबाड़ा, दीपकली, तीव्रा, कहरवा, सूल ताल, झूमरी, सवारी व पंजाबी

ब– उक्त तालों को दुगुन, तिगुन, चौगुन व आड़ में लिखना।

स– अन्य तालों की पहिचान करना ।

संगीत (तबला)

यूनिट 1

ताल–परिभा"ाा, उत्पत्ति एवं विकास, नाद–परिभा"ाा व उसकी विशे"ातायें, ताल के दस प्राण, ताल रचना के सिद्धान्त, तबले के वर्ण।

यूनिट 2

कला का अर्थ, ललित कलाएँ व उपयोगी, कला एवं सौन्दर्य, लय एवं लयकारियाँ, विभिन्न पारिभा"िाक शब्दों की व्याख्या एवं तुलनात्मक अध्ययन–मुखड़ा, मोहरा, पेशकार, कायदा, पल्टा, गत, परन, टुकड़ा, तिहाई, नवहक्का, लग्गी, लड़ी।

यूनिट 3: तबले की उत्पत्ति एवं विकास

तबले के घराने–सामान्य परिचय तथा घराने बनने के कारण, तबले के विभिन्न बाजों का विस्तृत तथा तुलनात्मक अध्ययन, तबले का अंग वर्णन, निम्नलिखित तबला वादकों का संक्षिप्त परिचय उ0 अहमद जान थिरकवा, उ0 अल्लारखा, पं0 सामता प्रसाद, पं0 किशन महाराज, मृदंग के घराने ।

यूनिट 4

उत्तर तथा कर्नाटक ताल पद्धतियों का तुलनात्मक अध्ययन, भातखण्डे तथा वि"णु दिगम्बर तालिपि पद्धतियों का तुलनात्मक अध्ययन, मृदंग, ढोलक, नक्कारा, ताशा, चंग, नाल, खंजरी तथा घटम् वाद्यों का परिचय, निम्नलिखित का तुलनात्मक अध्ययनः मोहरा–मुखड़ा, तिहाई–नवहक्का, कायदा–गतकायदा, रेला–कायदा रेला, तिपल्ली–चौपल्ली, स्वतंत्र वादन एवं साथ–संगत ।

यूनिट 5: निम्नलिखित तालों का शास्त्रीय अध्ययन

तीनताल, झपताल, एकताल, आड़ा चार ताल, सवारी (15 मात्रा), चारताल, धमार, सूलताल, तीव्रा, रूपक, दादरा, कहरवा, दीपचंदी, पंजाबी, मत्त, तिलवाड़ा, झूमरा, जत, फरोदस्त उपरोक्त तालों के नगमें/लहरें, तबला मिलाने की विधि ।

POLITICAL SCIENCE

Unit 1

1.1 Meaning, Nature and Scope of Political Science.
1.2 Concept of State, Theories of origin of State.
1.3 Government-Parliamentary and Presidential, Unitary and Federal.
1.4 Individualism and Idealism.
1.5 Socialism-Marxism, State Socialism, Guild Socialism and Anarchism.

Unit 2

2.1 Salient features of English, American and Swiss Constitution.
2.2 Legislature and Executive of England.
2.3 Legislature and Executive and Judiciary of America.
2.4 Legislature and Executive of Switzerland, Direct democracy in Switzerland.
2.5 Judiciary in England, America and Switzerland.

Unit 3

3.1 Preamble and main characteristics of Indian Constitution.
3.2 Central Legislature (President, House of People or Lok Sabha and

Council of States or Rajya Sabha)
3.3 Central Executive (President, Vice-President, Prime Minister and Council of Ministers).
3.4 Central Judiciary (Supreme Court)
3.5 State Government-Legislature, Executive and Judiciary.

Unit 4

4.1 Political parties in India.
4.2 U.N.O.: Aims, its Organs and Functions.
4.3 Local Self Government.
4.4 National Movement from 1885-1905.
4.5 Social Reforms under British rule in India.

Unit 5: STRUGGLE FOR SWARAJ UNDER THE LEADERSHIP OF MAHATMA GANDHI

5.1 Non-Cooperation Movement.
5.2 Acts of 1919 and 1935.
5.3 Quit India Movement.
5.4 Jallian Wala Bagh Massacre.
5.5 Independence Act of 1947.

संस्कृत

यूनिट 1: वैदिक एवं लौकिक साहित्य

1.1 वेद, ब्राह्मण, आरण्यक 1.2 उपनिषद्, वेदॉग, पुराण

1.3 महाकाव्य, खण्ड काव्य 1.4 दृश्य–काव्य 1.5 गद्य–काव्य, कथा–साहित्य

यूनिट 2: व्याकरण

2.1 अच् सन्धि 2.2 हल् और विसर्ग सन्धि

2.3 समास 2.4 तद्धित प्रत्यय 2.5 कृदन्त प्रत्यय

यूनिट 3: शब्द रूप एवं धातु रूप (दसों लकार)

3.1 स्वरान्त (अजन्त): पुल्लिंग, स्त्री0, नपुं0 3.2 व्यञ्जनान्त (हलन्त): पुल्लिंग, स्त्री0, नपुं0

3.3 सर्वनाम संख्या 3.4 परस्मैपदी 3.5 आत्मनेपदी, उभयपदी धातुएँ

यूनिट 4: अलंकार एवं छन्द

4.1 प्रमुख काव्यशास्त्री एवं उनके ग्रन्थ 4.2 अलंकार–शब्दालंकार

4.3 अर्थालंकार, उभयालंकार 4.4 छन्द–आर्या, अनु"टुप्, इन्द्रवज्रा, वशस्थ, मन्दाक्रान्ता

4.5 छन्द–मालिनी, वसन्ततिलका, शिखरिणी शार्दूलविक्रीडितम्, उपजाति

यूनिट 5: अपठित

5.1 मुहावरें 5.2 सूक्तियाँ

5.3 कारक–प्रथमा से तृतीया तक 5.4 कारक–चतुर्थी से सप्तमी तक 5.5 अनुवाद।

QUANTITATIVE ABILITY : FOR M.B.A. TEST

A pre-requisite skill for any manager is the ability to analyse and interpret data for decision making. Quantiative ability section of the test will examine problem solving and data interpretation ability of the candidates.

Problem Solving, Data Interpretation
Examples

1. It is possible to fill in the remaining squares in the figure so all the rows and all the columns have the same sum. That would be the entry in the middle square?

15		10
	25	

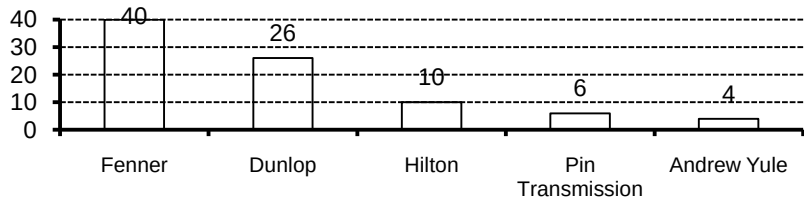
(a) 0 (b) 5 (c) 8 (d) 12

2. Define $p\Delta q=p^2+q^2$ & $p\nabla q=p^2-q^2$. Then the value of $(5\Delta 2)\nabla$ 25 is:
(a) 216 (b) 126 (c) 154 (d) 121

3. Refer to the bar graph below and answer question.

A1 to A5.

The following graph gives the net sales figures of the top 5 industrial V-



belt manufactures for the year 1998-99. A peculiar feature of this industry is market share has the same numerals as its net sales (in Rs. Crores) for eg. Market leader Fenner India Ltd. has market share of 40% and its net sales is Rs.80 crores.

A1. In 1998-99, the total industry sales in Rs. Crores were.
(a) 100 (b) 86 (c)90 (d) cannot be determined

A2. The net sales of all the companies, apart from the top five, were (in Rs. Crore)
(a) 16 (b) 17 (c) 14 (d) 18

A3. The combined market share of Hilton Rubbers, Dunlop Ltd. and Andrew Yule.
(a) exceeded that of the remaining two of the top five companies.
(b) was same as that of Fenner India Ltd.
(c) was more than 50%
(d) was less than that of Fenner India Ltd.

A4. Which of the following statements can be concluded from the data given?
(a) There is no single manufacturer with the largest market share.
(b) The market share of any manufacturer in the top five exceeds the combined market share of all others (except the top five)
(c) No other manufacturer can have as large share as Fenner India Ltd.
(d) The combined market share of the other companies (apart from the top five) exceeds the market share of Dunlop Ltd.

A5. If the profit of Dunlop Ltd. Was 40% of the net sales of Hilton rubbers, the profit of Dunlop per Rupees of net sales is
(a) 0.25 (b) 0.35 (c) 0.05 (d) 0.15

PG DIPLOMA IN TEXTILE DESIGNING & PRINTING

The test paper will have two compulsory parts. The FIRST PART will have theory questions to judge the Environment Awareness and Aptitudes of the candidate for textile designing, comprising of 20 marks (30 minutes duration).

The SECOND PART will have some practical work on designing, sketching, colouring, and creativity comprising of 40 marks (150 minutes duration).

PART I (THEORY): 20 marks (30 minutes)

Unit 1: TRADITIONAL TEXTILES

1.1 Names of the places from where different Embroidered, Painted, and Printed Textiles come.
1.2 Textile industries and their location.
1.3 Places of various textile exhibitions held in India.
1.4 Specialities of different textiles.
1.5 Inception of different crafts being used on textiles and their places of origin.

Unit 2: TEXTILE MATERIALS

2.1 COTTON-Types, kind, durability, functional use, and Procurement.
2.2 SILK-Types, kind, durability, functional use and Procurement.
2.3 WOOL-Types, kind, durability, functional use and Procurement.
2.4 SYNTHETIC-Types, kind, durability, functional use and Procurement.
2.5 JUTE-Procurement, functional use, types, products made from it.

Unit 3: DESIGN

3.1 Standard sizes of Various textile products.
3.2 Types of design styles for different types of people.
3.3 Standard size of fixtures for designing upholstery .
3.4 Type of material required for designing.
3.5 Design and colour coordination.

Unit 4: TRADITIONAL TO MODERN DESIGNS/FASHION TRENDS

4.1 Names of traditional designing styles.
4.2 Designs being adapted on textiles.
4.3 Great Indian Artists/Designers and Great Foreign Artists / Designers.
4.4 Adaptation of modern designs in traditional style.
4.5 Design creation in Fashion Trends.

Unit 5: COLOUR

5.1 Results obtained from mixing different colours.
5.2 Warm and cool colours and their names.
5.3 Seasons associated with colour.
5.4 Types of colour scheme.
5.5 Styles and designs associated with colour.

PART II (PRACTICAL): 40 marks (150 minutes)

1. DESIGNING-Floral, geometrical, modern, traditional.
2. ENLARGEMENT/REDUCTION-Of a given design.
3. MEMORY DRAWING-Evolving pencil drawing, illustrations.
4. THEMATIC COLOUR ARRANGEMENT.
5. CREATIVE CRAFT-To evaluate imagination, innovative approach, and aesthetics.

PG DIPLOMA IN JOURNALISM & MASS COMMUNICATION

Aptitude Test

1. The medium of answering the questions in written test will be English only.

2 **The test aims at discovering the ability to describe, analyze, comment and discuss the topics of general interest and current affairs. The range of topics will span from national to international.**

SAMPLE QUESTION PAPER

Note:

The question Paper has **EIGHT** sections (A to H) with instructions in each section. You have to attempt questions from ANY FIVE sections. All sections carry **EQUAL** marks. Read the instructions given in each section before answering questions.

ANSWER OF EACH SECTION MUST BE GIVEN IN SEPARATE PLAIN ANSWER SHEET. THE MAXIMUM NO.OF WORDS ALLOTED FOR EACH SECTION IS 300.

SECTION A

Write on any ONE of the following. Your description should be as visual as possible. (300 Words)

1. Inside a cyber café/cyber *dhaba*
2. Planting paddy during monsoons.
3. Family watching its favourite TV shows.

SECTION B

Comment on any ONE of the following: (300 Words)

1. Floods in India are more of manmade disaster than a natural calamity.
2. 20-twenty is the magic of Cricket.
3. Dress code should be made compulsory in colleges.

SECTION C

Discuss any ONE of the following: (300 Words)

1. We just cannot ignore Laloo in Bihar politics.
2. The rise of women CMs will give more teeth to women.
3. Smaller regions can govern themselves better.

SECTION D

Discuss any ONE of the following: (300 Words)

1. World peace is a myth.
2. Blasts in London have sent a shiver down the sleeves of Great Britain.
3. Ozone depletion is more because of irresponsible attitude of the third world countries towards industries.

SECTION E

Express your views on any ONE of the following: (300 Words)

1. Significance of e-mail poll in media.
2. R.K.Laxman and his common man.
3. NGOs role in social service.

SECTION F

Express your views on any ONE of the following: (300 Words)

1. Future of digital films.
2. Impact of the underworld on Indian cinema.
3. National Award of films are politically motivated.

SECTION G

Express your views on any ONE of the following: (300 Words)

1. The Bachans presence in *Sarkar*
2. Utility of FTV
3. Vulgar scenes on TV

SECTION H

Write on any ONE of the following: (300 Words)

1. Baglihar Project
2. Ram Gopal Verma style of film making
3. Harry Potter's influence on young mind.

COMMON FOR INTERMEDIATE & GRADUATE LEVEL

GENERAL KNOWLEDGE

Unit 1: GEOGRAPHY

1.1 The Earth and its Solar System 1.2 Physical Geography (World)
1.3 Physical Geography (India) 1.4 Countries Capitals, Currencies
1.5 India - States, Capitals, Cities, Languages

Unit 2: SCIENCE/TECHNOLOGY

2.1 Physics 2.2 Chemistry 2.3 Life Sciences
2.4 Inventions & Discoveries 2.5 Diseases

Unit 3: BOOKS, AUTHORS, ABBREVIATION ETC.

3.1 Famous Books and Authors-Indian and Foreign
3.2 Abbreviation, Acronyms, Foreign words & Phrases
3.2 Sports and Games-Famous Trophies and Tournaments, Leading Sportsmen, Terms associated with different sports and games, Olympic and Asian Games.
3.3 Important Indian Awards–Civil and Military awards Important International Awards-Noble prizes, Magasaysay awards etc.
3.5 Art and Culture-Various Art Forms, Places and Artists associated with them, Sobriquets, Major Festivals.

Unit 4: SOCIAL SCIENCES

History-Indian Major Historical Periods and their Features:-

4.1 From the Indus Valley Civilization to the First Battle of Panipat in 1526 AD.
4.2 From 1526 A.D. to the Modern Period.
4.3 Political Awareness: Indian Constitution-Its main features-Fundamental Rights, Important personalities and major events in India since Independence.
4.4 Economics: Indian Economy
4.5 Statistics-Elementary Statistics-Meaning and Importance of Statistics, Statistical Average.

Unit 5: CURRENT AFFAIRS

LOGIC & REASONING

Logic & Reasoning Ability: A pre-requisite skill for any management programme is the ability of logical reasoning and decision making. This section of the test will examine the ability of the candidate, to evaluate an inference or argument and discriminate between professional decision making and guess work.

Example 1: Which of the following would come in place of the question mark (?) in the following letter series :
DEF HIJ MNO ?
(A) STU (B) RST (C) RTV (D) SRQ
Answer: (A)

Example 2: Atmaram was born on 15th April, Rajiv was born 5 days before him. If Independence day fell on Friday that year on which day was Rajiv born?
(A) Tuesday (B) Thursday (C) Sunday (D) Saturday
Answer: (B)

ENGLISH LANGUAGE, EXPRESSION & COMPREHENSION

English Language: Grammar (Active Passive, Common errors in English, Direct Indirect, Transformation-Simple, Complex, Compound, Synthesis of Sentences), Vocabulary (Synonyms, Antonyms, one word substitution), Figure of speech, Idioms, Phrases.
Expression: Candidate's ability to express himself/herself in English Language will be assessed in this section.
Comprehension: Candidate's power of comprehension of the subject presented will be assessed. Many of the questions may be based on what is implied in the massage, rather than on what is explicitly stated. The ability to draw inferences from the material is critical for successfully completing this section.
Example 1: Read the following passage and choose the one best answer out of (A), (B), (C), (D).
Popular belief holds that a snake's age can be told by counting rings, but the idea is fallacious. In fact a rattle snake may lose old skin as often as four times a year.
Q. How often does a rattle snake shed its skin ?
(A) Once every four years.
(B) Once every four months.
(C) Upto four times every year.
(D) Four times more often than other snakes.
Answer:(C)

SYLLABUS (B.Ed. LEVEL)

INTERNAL SCHOOL ORGANISATION AND HEALTH EDUCATION

Unit 1: SCHOOL PRINCIPAL & TEACHER
1.1 Importance of Principal.
1.2 Qualities of Principal.
1.3 Functions and Duties of Principal.
1.4 Importance & Qualities of a Teacher.
1.5 Duties and Functions of a Teacher.
Unit 2: SCHOOL PROGRAMMES
2.1 Meaning and Importance of school time-table.
2.2 Principles of time-table construction.
2.3 Types of time-table.
2.4 Meaning, Importance and Maintenance of school records and registers.
2.5 Types of records and registers.
Unit 3: SCHOOL FUNCTIONS
3.1 Meaning and Importance of Co-curricular activities.
3.2 Type of Co-curricular activities. Principles of organizing co-curricular activities.
3.3 Meaning, Importance and Organization of guidance services.
3.4 Meaning, Importance and Principles of Discipline.
3.5 Meaning of establishing discipline, Corporate life of School.
Unit 4: INSPECTION & SUPERVISION
4.1 Concept and Characteristics of Inspection.
4.2 Concept and Characteristics of Supervision.
4.3 Difference between Inspection and Supervision.
4.4 Planning and Organisation of Supervision Programme.
4.5 Improvement in the existing system of Inspection and Supervision Programme in Schools.

Unit 5: HEALTH EDUCATION

5.1 School building surroundings, light and ventilation arrangement in classroom, Types of furniture and its effects on postures and its remedies.
5.2 Physical Exercises, Personal cleanliness, Health Inspection of pupils.
5.3 Communicable diseases (modes, precautions and preventive measures in schools).
5.4 Water Arrangement and mid-day meals (its importance and arrangement).
5.5 Helping in the education of handicapped children (related to vision, hearing and speech).

FUNDAMENTALS OF EDUCATIONAL THEORY

Unit 1: CONCEPT & NATURE OF EDUCATION

1.1 Meaning of Education: Etymological, Narrower, Wider, Analytical Education and Literacy, Education & Instruction, Education and Training, Education and Teaching.
1.2 Definitions of Education.
1.3 Education as a Process & Education as product.
1.4 Education as Science & Education as Art.
1.5 Modes of Education: Formal, Non-formal and Informal.

Unit 2: AIMS & BASES OF EDUCATION

2.1 Aims of Education-Social, Individual, Vocational, Economic, Physical, Cultural, Intellectual, Moral, Religious.
2.2 Aims of Education-National & International Understanding, Emotional Integration.
2.3 Bases of Education-Scientific, Political, Economic.
2.4 Bases of Education-Psychological, Cultural, Religious.
2.5 Bases of Education-Philosophical, Meaning of Philosophy & its relationship with Education.

Unit 3: PHILOSOPHY AND EDUCATION [I]

3.1 Philosophical Issues-Metaphysical, Epistemological and Axiological.
3.2 Naturalism-Meaning, Definition, Types, Origin, Growth, and Characteristics.
3.3 Naturalism in Education.
3.4 Idealism-Meaning, Definitions, Origin, Growth, Characteristics.
3.5 Idealism in Education.

Unit 4: PHILOSOPHY AND EDUCATION [II]

4.1 Pragmatism-Meaning, Origin, Growth, Definition, Characteristics.
4.2 Pragmatism in Education.
4.3 Realism-Meaning, Origin, Growth, Characteristics.
4.4 Forms of Realism, Exponents of various forms of Realism, Impact of various forms of Realism on Education.
4.5 Realism in Education.

Unit 5: SOCIOLOGICAL FOUNDATION OF EDUCATION

5.1 Sociological basis of Education, its Meaning, Characteristics and Impact on Education.
5.2 Socialization-Meaning, Importance, Process of Socialization, Factors leading to Socialization.
5.3 Role of family and School in the Socialization of the Child, School as the creator of Society and School as Creation of Society.
5.4 Role of Society and Community in Socialization of the Child, Emerging Indian Society and Education.
5.5 Democracy-Concept, Meaning, Definitions, Principles of Democracy, Democracy in Education and Education in Democracy.

FUNDAMENTALS OF EDUCATIONAL PSYCHOLOGY

Unit 1

1.1 Meaning, Nature and Scope of Educational Psychology.
1.2 The Concept and Nature of Growth and Development.
1.3 (a) Physical Development
(b) Factors Affecting Physical Growth and Development.
1.4 (a) Cognitive Development (Mental & Intellectual)
(b) Factors Affecting Cognitive Development.
1.5 (a) Social and Emotional Development
(b) Factors Affecting Social and Emotional Development.

Unit 2

2.1 (i) Concepts & Nature of Learning (ii) Factors Affecting Learning Process.
2.2 Theory of Connectionism (Trial and Error).
2.3 Conditioning Theories: Classical & Operant.
2.4 Field and Cognitve Theories of Learning (a) Insight (b) Piaget (c) Gagne.
2.5 Transfer of Learning.

Unit 3

3.1 Intelligence: Concept, Nature, Theories of Intelligence (a) Unifactor (b) Two factor (c) Multi Factor.
3.2 Measurement of Intelligence.
3.3 Exceptional Children (a) Mentally Retarded (b) Problem Children, Maladjusted & Delinquent Children.
3.4 Gifted Children & Enrichment Programme.
3.5 Backward Children & Remedial Teaching.

Unit 4

4.1 (a) Personality: Its Meaning and Nature (b) Factors Affecting Personality Development.
4.2 General Introduction to its assessment.
4.3 Mental-health of the child, Effect of Home and School, Role of Parents and Teacher in the adjustment of Child.
4.4 Group Dynamics: Nature, Structure and Educational implications of different types and sizes of the groups.
4.5 Role of individual in a group, Leadership patterns, Group activities in and out of the class.

Unit 5: STATISTICS RELATED TO MEASUREMENT AND EVALUATION OF THE LEARNING OUTCOMES

5.1 Collection and Tabulation of Data.
5.2 Measures of Central Tendency-Meaning and Interpretation of Mean, Median and Mode.
5.3 Measures of Dispersion, Range, Mean Deviation and Standard Deviation Percentile: Meaning and its Uses.
5.4 Graphic Representation of Data: Frequency Polygon, Histogram, Cumulative Frequency Curve, Ogive.
5.5 Concept of Normal Probability Curve and its Characteristics.

EDUCATION AND NATIONAL DEVELOPMENT

Unit 1: ROLE OF EDUCATION IN NATIONAL DEVELOPMENT

1.1 Meaning and Scope of National Development.
1.2 Concept and Characteristics of Educational Development.

1.3 Role of Education in National Development.
1.4 National System of Education in India.
1.5 Educational Structure & Education Policy (1968,79,86).

Unit 2: EDUCATIONAL DEVELOPMENT IN INDIA WITH REFERENCE TO SCHOOL EDUCATION

2.1 Pre-School Education-Concept, Problems & Remedies.
2.2 Universalization of Elementary Education.
2.3 Expansion of Elementary Education.
2.4 Curricula and Teaching Methods.
2.5 Problems of wastage and stagnation & Equalization of Educational opportunity.

Unit 3: SECONDARY EDUCATION

3.1 Curricula. 3.2 Teaching Methods.
3.3 Evaluation. 3.4 Language Policy.
3.5 Vocationalization of Secondary Education.

Unit 4: HIGHER EDUCATION

4.1 Objectives. 4.2 Administration.
4.3 Methods and Evaluation. 4.4 University Autonomy.
4.5 Role of Distance Education.

Unit 5: TEACHER EDUCATION

5.1 Development of Teacher Education in India.
5.2 Present status of Teacher Education.
5.3 Secondary Teachers Training.
5.4 Innovative Programmes of Teacher Education.
5.5 Problems of Teacher Education.

MATHEMATICS SYLLABUS: FOR M.TECH. TEST

Unit 1: ALGEBRA

1.1 Convergence of Infinite Series with simple problems.
1.2 Matrices-Addition, substraction, multiplication, division, inverse and Rank with simple problems.
1.3 Linear Transformations.
1.4 Determinants, System of linear equations.
1.5 Modern Algebra-Binary operations, Definitions of Group, Ring, Integral domain, Field with simple problems.

Unit 2:

Laplace Transforms: Standard forms, Shifting and convolution theorems, Transforms of derivatives, Inverse Laplace Transforms, Laplace Transforms of error, Heaviside, Dirac-Delta functions, Application to the solution of linear and simultaneous differential equations in Electrical and Mechanical Systems.
Fourier Series: Drichtets' conditions, Half range series, Harmonic analysis.

Unit 3: NUMERICAL ANALYSIS

Algebraic and Transendental Equations: Numerical solution, Method of Bisection, Newton-Raphson iteration, acceleration of convergence by Aitken Triangle square process.

Linear Simultaneous Algebraic Equations: Solution, Cholesbys, Jacokis and Gauso-Serdel methods.
Numerical solution of ordinary differential equations: Methods of Taylor, Picard, Euler, Range-Kutta, Adams-Bachforth and Milve, Simultaneous differential equations.

Unit 4:
4.1 Methods for solving differential equations of first order and first degree (variable separable, linear, exact).
4.2 Simple second order differential equations.
4.3 Strings in two dimensions, Forces in three dimensions.
4.4 Kinematics, Rectilinear motion, Motion in a plane.
4.5 Moment of Inertia, D'Alembert's principle.

Unit 5: STATISTICS
5.1 Graphical representation of data, measures of central tendency.
5.2 Measure of variability.
5.3 Binomial distribution of Poisson, Normal distribution.
5.4 Correlation Probability.
5.5 Probability correlation and regression.
