OPTIONAL SUBJECTS

AGRICULTURE

Agriculture, its importance in national economy, factors determining agro-ecological zone and geographical distribution of crop plants.

Important crops of India, Culture practices for cereal, pulses, oilseed, fiber, sugar and tuber crops and the scientific basis for these crop rotation, multiple and relay cropping, intercropping and mixed cropping.

Soil as a medium of plant growth and its composition, mineral and organic constituents of the soil and their role in crop production, chemical, physical and micro-biological properties of the soils, essential plant nutrients, their functions, occurrence and cycling in soils, principles of soil fertility and its evaluation for judicious fertilizer use. Organic manures and bio-fertilizers, straight, complex and fixed fertilizers manufactured and marketed in India.

Principles of plant psychology with reference to plant nutrition, absorption, translocation and metabolism of nutrients, diagnosis of nutrient deficiencies and their amelioration, photosynthesis and respiration, growth and development auxine and hormones in plant growth.

Elements of genetic and plant breeding as applied to improvement of crops, development of plant hybrids and composites, important varieties, hybrids and composites of major crops.

Important fruit and vegetable crops of India, the package of practices and their scientific basis, crop rotations, intercropping and companion crops, role of fruits and vegetables in human nutrition, post harvest handling and procession of fruits and vegetables.

Serious pests and diseases affecting major crops. Principles of pest control, integrated control of pests and diseases proper use and maintenance of plant protection equipment.

Principles of economic as applied to agriculture, farm planning and resource management for optimal production. Farming system and their role in regional economics.

Philosophy objectives and principles of extension. Extension organization at the State, district and block levels, their structure, functions and responsibilities. Methods of communication. Role of farm an organization in extensions service.

BOTANY

Origin of life-basic ideas on the origin of earth, origin of life, chemical and biological evolution.

Morphology, basic anatomy and taxonomy elementary knowledge of structure differentiation and function of various types of tissues and organs. Principles of nomenclature, classification and identification of plants.

Plants diversity- A general account of structure and reproduction of viruses, algae, fungi, lichens, bryophytes, pteridoohytes, gymnosperms and angiosperms, concept of alternation of generations.

Plant functions-elementary knowledge of photosynthesis, nitrogen metabolism, respiration, enzymes, mineral nutrition and water rotation.

Plant growth and development-dynamics and growth and growth hormones. Psychology of flowering and seed germination.

Reproduction- sexual and asexual reproduction, mechanism of pollination and fertilization. Development of seeds.

Cell-biology-Cell structure and function of organelles. Mitasis and meiosis.

Genetics- concept of gene, law of inheritance, mutation and polyploidy. Genetics and plant improvement.

Evolution- A general account.

Plant pathology – a general account of importance diseases of crops plants of India and the control.

Plants and environment – a general account of.

CHEMISTRY

Inorganic chemistry.

Atomic number, electronic configuration elements. AUFBAU principles of hands multiplicity rule. Pauli's exclusion principles, long form of periodic classification of elements. Transition elements and their salient characteristics.

Atomic and ionic radio, ionization potential, electron allinitu and electro negativity.

Natural and artificial radioactivity, nuclear fission and fusion.

Oxidation states and oxidation number, common oxidizing and reducing agents, ionic equations.

Bronsted and Lewis theories of acids and basis.

Chemistry of the common elements and their compounds treatise especially from the point of view of periodic classification. Principles of extraction, isolation of common elements.

Whiher's theory of coordination compounds. Electronic configuration of complexes involved in the common metallurgical and analytical operations.

Structures of hydrogen pereside, Persulfuric acids, dib orange, ammonium chloride and the important oxyacids of nitrogen, phosphorus, chlorine and sulphur chloride and the important oxyacids of nitrogen, phosphorus, chlorine and suplhur.
Inert gases- isolation and chemistry.

Principles of inorganic chemical analysis.

Outlines of the manufacture of Sodium Carbonate, Sodium hydroxide, ammonia, nitric acids, sulphoric acid, cement, glass and artificial fertilizers.

Organic chemistry.
Modern concepts of covalent holding. Electron displacement inductive, mesmeric and hyperconjungative effects. Effect of structure of dissociation constants of acids and basis. Resonance and its applications to organic chemistry, principles of organic reaction mechanism. Addition mechanisms, addition nucleophillic and electrosphillic substitution.

Alkanes, alkanes and alkynes. Petrolium as a source of organic compounds. Simple derivatives of aliphatic compound Alcenals, adehudes, ketones, acids, halides, osters, others, amines and anhpridws, chlorides andamides.Monobasic hudrexy. Ketonic and amine acids, Malonic and acetic esters,undaturedianc basis acids. Lactic, Tartaric, maleic and fumaric acids. Carbohydrates: Classification and general reactions. Glucose, fructose and sucrose . Organomettallic compounds,Orignard reagents.

Stereochemistry: Optical and geometrical isomerism, concept of confermation.

Benzene and its simple derivative: Toluence,Zylenes,phenols, hallde̊s, nitro and amine compounds. Benzols, salicylic, tinnamic mandellic and sulphoric acids , Aromatic aldehydes and ketones. Diazo azo and hydrazo compounds: Aromatic substitution. Naphthalene, pyridine and quinilince. Synthesis, structure and simple reactions. Simple chemistry of economically important materials e.g. coal tar cellulose, starch, pils, fats, pretine and vitamins.

Physical Chemistry : Kinetic theory of gases and gas law. Maxwell's law of distribution of velocities, and equation. Law of corresponding, states. Liquification of gas. Specific heats of gases, ratio of Cp/ Cv.

Thermodynamics: the first law of the thermodynamics is othermal and adiabatic. Enthalpy. Heat capacities. Thermo chemistry. Heats of reaction, formation, solution and combustion. Calculation of bond energies. Kirchooffs equation.

Criteria for spontaneous change. Second law of thermo dynamic , entropy free energy, criteria of equilibrium.

Solutions, osmotic pressure, lowering of vapour pressure, depression of freezing point, elecation of boiling point, Determination of molecular weight in solution. Association and dissociation of salutes.

Chemical equilibria . Law of mass action and its application to homogenous and laterogenous equilibriums chatelis principles and its application to chemical equilibrium

Chemical kinetic: Molecularity and order of a reaction.

First order and second order reactions. Determination of order of a reaction temperature coefficient and energy of activation, collision theory of a reaction rates, Activated comples theory.

Electrochemistry: Faraday's law of electrolysis, conductivity of an electrolytic: equivalent conductivity and its variation with dilution solubility of sparingly soluble salts, electrolytic dissociation, Ostwald's delusion law, namely of strong electrolytes, solubility products, strength of acids and hydrolysis of salts, hydrogenation septration, buffer action, theory of indicators.

Reversible cells, standard hydrogen and calomel electrodes. Electrodes and redeox-potentials. Concentration cell. Determination of Ph. Transport number, ionic product of water potentiometric titrations.

Phase rules : explanation the term involved. Applications to one and two components system. Distribution Law.

Colloids : General natures of colloidal solutions and their classification, general methods of preparation and properties of colloids. Goagulat on protective action and gold number absorpation.

Catalysis: Homogeneous and heterogenous catalysis promoters poisoning.

Photochemistry: Law of Photochemistry, Simple numerical problems.

Simple numerical and conception problem bases and on the full syllabus.

Commerce

Accounting

Nature, Scope and Objectives of Accounting-Accounting as an Information System-Users of Accounting Information.

Generally Accepted Principles of Accounting- The Accounting Equation-Accrual concept-Other concepts and conventions, Distinction between capital and revenue expenditure. Accounting Standards and their application-Accounting standards relating to fixed assets, depreciation, inventory, recognition of revenue.

`nal Accounts of Sole Proprietors, Partnership Firms and Limited Companies-Statutory Provisions- `erves, Provisions and Funds.

`counts of non profit organization.

Accounting problems related to admission and retirement of a partner and dissolution of a firm.

Accounting for Shares and Debentures-Accounting Treatment of Convertible Debentures.

Analysis and Interpretation of Financial Statements Ratio analysis and interpretation Ratios relation to short term liquidity, long term solvency and profitability-Importance of the rate of return on investment (ROI) in evaluating the overall performance of a business entity-Cash-flow Statement and Statement of Source and Application of Funds-Societal obligations of Accounting.

Auditing

- Nature, objectives and basic principles of auditing.
- Techniques of Auditing-physical verification, examination of documents and vouching, direct confirmation, analytical review.
- Planning an audit, audit programmes, working papers, audit process.
- Evaluation of internal controls.
- Test checking and sampling.
- Broad outlines of company audit.
- Audit of non-corporate enterprises.
- Internal and management audit.

Business Organisation

Distinctive feaures of different forms of business organization.

Sole Proprietor

Partnerships-characteristics, Registration, Partnership deed, Rights and duties, Retirement, Dissolution.

Joint Stock Company-Concept, characteristics, types.

Cooperative and State ownership forms of organizations.

Types of securities and methods of their issue.

Economic functions of the capital market, stock exchanges, Mutual Funds. Control and regulation of capital market.
Business combinations; control of Monopolies. Problems of modernization of industrial enterprises. Social Responsibility of business.

Foreign Trade-Procedure and financing of import and export trade. Incentives for export promotion. Financing of foreign trade.

Insurance- Principles and practice of Life, Fire, Marine and General Insurance.

Management

Management functions – Planning –strategies, Organising- Levels of authority Staffing, Line function and staff function, Leadership, Communication, Motivation, Directing.-Principles, Strategies.

Coordination-Concept, types, methods.

Control-principles, performance standards, corrective action. Salary and wage administration-Job evaluation.

Organisation Structure –Centralization and decentralization-Delegation of authority –span of control – Management by objectives and Management by Exception.

Management of change; Crisis Management.

Office Management-Scope and principles; systems and routines; handling of records- modern aids to Office management; office equipment and machines; Automation and Personal computers.

Impact of Organisation and Methods (O & M)

Company Law

Joint stock companies-incorporation; documents and formalities-Doctrine of indoor management and constructive notice.

Duties and powers of the board of directors of a company.

Accounts and Audit of Companies.

Company Secretary-role and functions-qualifications for appointment.

ECONOMICS

National economic accounting : national income analysis generation and distribution of income and related aggregates, gross national product, net national product, gross domestic product and net domestic products (at market price and factor costs) at constant and current prices.

Price theory : law of demand, utility analysis and indifference curve technique, consumer equilibrium, cost curves and their relationships, equilibrium of a firm under different market structures pricing of factors of production.

Money and Banking: definition and functions of money (M1,M2,M3), credit creation, credit source, costs and availability, theories of the demand for money.

International trade: the theory of comparative costs, Ricaedian and Hockscher-Ohlin : the balance of payment and the adjustment mechanism. Trade theory and economic growth and development.

Economic growth and development: Meaning and measurement, characteristics of underdevelopment, rate and pattern. Modern economic growth, sources of growth distribution and growth problems of growth of developing economics.

Indian economy : India's economy since independence trends in population growth since 1961, population and poverty general trends in national income and related aggregates, planning in India, objectives, strategy, and rate and pattern of growth , problems of industrialization strategy ,agricultural growth since independence with special reference to foodgrains, unemployment, nature of the problem and possible solutions. Public finance and economic policy.

GEOGRAPHY

General principles : (i) Physical geography (ii) Human Geography (iii) Economic geography (iv) Cartography (v) Development of geographical thought.

Geography of the world (i) World land forms, climates, oils and vegetation (ii) Natural regions of the world (iii) World population distribution and growth, races of marking and international migrations, cultural realms of world (iv) World agriculture, fishing and forestry, minerals and energy resources, world industries (v) Regional study of Africa, South-East Asia, S.W. Asia, Anglo America, USSR and China. Geography of India (i) Physiography, climate, soil and vegetation (ii) Irrigation and agriculture, forestry and fisheries (iii) Minerals and energy resources (iv) Industries and industrial development (v) Population and settlements.

GEOLOGY

(a) Physical Geology: Solar system and the earth origin, age and internal constitution of earth, weathering geological work of river, lake, glacier, wind, sea and groundwater. Volcanoes-types, distribution, geological effects and products. Earthquake distribution, causes and effects. Elementary ideas about geosynclines isostasy and mountain building, continental drift. Seafloor spreading and place rectonics.

(b) Geomorphology : Basic concepts of geomorphology, normal cycle of erosion, drainage patterns. Landforms formed by ice, wind and water.

(c) Structural and field Geology : Clinometers compass and its use. Primary and Secondary structures. Representation of altitude, slope, strike and dip-effects of topography on out crops. Floods, fault, unconformities and joints, their description, classification, recognition in the field and their effects on outcrops. Criteria for the determination of the order of superposition in the field. Nappes & geological windows. Elementary ideas of geological survey and mapping.

(d) Crystallography: Crystalline and amorphous substances, crystal, its definition and morphological characteristics, elements of crystal structure. Law of crystallography. Symmetry elements of crystals belonging to normal class of seven crystal systems. Crystal habits and twinning.

(e) Mineralogy: Principles of optics. Behaviors of light through so tropic and anisotropic substances. Petrological microscope, construction and working of Nicoal Prism. Birofringence, Pleochroism, extinction , physical, chemical and optical properties of more common rock forming minerals of following groups: quarts, feldspare, mica, amphibole, pyroxene, olivine, garnet, chlorite and carbonate.

(f) Economic Geology: Ore,ore mineral and gangue. Outline of the processes of formation and classification of ore deposties. Brief study of mode of occurrence, origine, distribution (in India) and economic uses of the following: Gold ores of iron, manganese, chromium, copper aluminum, lead and zinc, mica, gypsum, magnesite and kyanite, diamond, coal and petroleum.

(g) Igneous Petrology: Magma- Its composition and nature crystallization of magma. Differentiation and assimilation. Bowen's reaction principle. Texture and structure of igneous rocks. Mode of occurrence and mineralogy of igneous rocks. Classification and varieties of igneous rocks.

(h) Sedimentary Petrology: Sedimentary process and products. An outline classification of sedimentary structures (Bedding, cross bedding ,graded bedding, ripple mark, sole structure, parting lineation).

INDIAN HISTORY

SECTION 'A' (1) Foundation of Indian culture and civilization : Indus civilization. Vedic Culture, Sangam age.

(2) The religious movements : Buddhism, Jainism, Bhagvatism and Brahmanism.

(3) The Maurya Empire.

(4) Trade and commerce in the pre-Gupta and Gupta period

(5) Agraian structure in the post-Gupta period.

(6) Changes in the social structure of ancient India.

SECTION'B' (1) Political and Social conditions (800-1200) the cholas.

(2) The Delhi Sultanate : administration agrarian condition

(3) The provincial dynasties: Vijaynagar empire.
(4) The Indo-Islamic Culture: Religious movement 15th and 16th Centuries.
(5) The Mughal empire (1526-1707) Mughal Polity agrarian relations, arts architecture and culture under the Mughals.
(6) Beginning of European Commerce.
(7) The Maratha Kingdom and confederacy.

SECTION 'C' (1) The decline of the Mughal empire : the autonomous state with special reference to Bengal, Mysore and Punjab.
(2) The East Indian Company and the Bengal Nawabs.
(3) British economics impact in India.
(4) The revolt of 1857 and other popular movement against British rule in 19th Century.
(5) Social and cultural awakening : the lower caste:trade union and the peasant movements.
(6) The freedom struggle.

LAW

1. Administrative Law :
   1. Nature and scope of administrative law.
2. Delegated Legislation.
   - (i) As distinguished from administrative power
   - (ii) Factors leading to its growth
   - (iii) Restraints on delegation.
3. Control : Judicial and legislative.
4. Principles of natural justice and fairness.
5. Ombudsmand and C.V.C.
6. Public undertakings.
7. (i) Administrative agencies and tribunals
   (ii) Constitutional Law of India
   Salient features of the Indian constitution : preamble, directive principles of State Policy, Fundamental rights, Fundamental duties, Parliament, President and his powers Union and State , Judiciary, Emergency provisions, Amendment to the Constitution.
   (iii) Law of Conduct: General principles of the contract, offer, acceptance, considerations, capacity to contract, breach of contract, quashi contract Ss. 1 to 75 of the Indian Contract Act, 1872).
   (iv) International Law:
   Nature, definition, source of International law vis-à-vis municipal law, state recognition and UNO, International court of Justice. UN Charter and human rights.
   (v) Torts and crimes:
   Definition of Tort and crime. Nature and extent of Tortuous and criminal liability, vicarious liability and State liability principles of joint liability, general defence and exceptions under law of Torts and Crime.

MATHEMATICS

Algebra : Development of number system. Natural numbers, integers, rational numbers, real and complex numbers , division algorithm, greatest common division, polynomials, division algorithm derivations, integral rational real and complex roots of a polynomial, relation between roots and coefficients, repeated roots elementary symmetric functions, numerical methods of solutions of algebric equations, cubic and the quartic (Cardan's method).

Matrices : Addition and multiplications, elementary row and column operations, rank, determinants, solutions of systems of linear equations.

Calculus : Real numbers, order completeness of property, standard functions, limits, continuity, properties of continuous functions in close intervals, also differentiability. Mean values theorem, Trailer's theorem Maxima and Minima, application to curvest-tangent normal properties curvature sysptotes, soluble points, points of inflextion and tracing.

Definition of a definite integral of a continuous function at the limit of a sum fundamental theorem of integral calculus methods of integration. Rectification, quadrature, volume and surface of solids of revolutions.

Partial differentiation and its applications, double and triple integration . Application to area, volume, centre of mass moment of inertia etc, simple test of convergence of series of positive terms , alternating series and absolute convergence.

Differential equations : First order differential equations, singular solutions, geometrical interpretations, linear differential equations with constant coefficients.

Geometry : Analytic geometry of straight lines and conics furred of Cartesian and Polar coordinates. Three dimensional geometry for planes, straight lines ,sphere and cone.

Mechanics : Concept of particle, lamina, rigid body , displacement, force, mass, weight, concept of scalar and vector quantities vector algebra,combination and equilibrium of coplanar forces Newton's law of motion, limitation of Newtonian mechanics, motion of a particle in a straight line and on a plane.

PHILOSOPHY

(I) Logic-symbolic, logic syllogism and fallacids, mathematical logia, truth functional logiv.
(II) History of Indian ethics : source, types, meaning of dharma : ethics and metaphysics and Karma and freewill karma and Gyana.
(III) History of Western ethics, moral standards, judgment , order and progress, ethics and emotivision, determinism and free will , crime and punishment, individual and society.
(IV) History of Philosophy-Western, Indian Orthodox, Indian heterodox.

PHYSICS

Mechanics : Units and dimensions, S.I. units, Newton's Law of motion conservation of linear and angular momentum, prohectries, rotational motion, moment of inertia, rolling motion, Newton's Law of gravitations , planetary motion, artificial satellites, fluid motion. Bernoullias theories, surface tension, viscosity, plastic constants, bending of beams, torsion of cylindrical bodies. Elementary ideas of special theory of relativity.

Thermal Physics: Thermometry, Zeroth, first and second laws of thermodynamics, heat engine. Maxwell's relations. Kinetic theory of gases. Brownian motion. Maxwell's velocity distribution equipartition of energy, mean freepath transport phenomena, Van Dear Wall's equation of State. Liquification of gases. Black body radiation. Planck's Law. Conduction in solids. Waves and Oscillation, Simple harmonic motion, wave motion, superposition principles, damped oscillations, forced oscillations and resonance, simple oscillatory systems, cirbrations of rods strings and air columns. Doppler effect. Ultrasonic. Reverberation and Sabines Law. Recording and reproduction of sounds.

Optics : Nature and propagation of light, interference differ-action , polarization of light, simple interferometers . Determination of wave, length of spectral line. Electromagnetic spectrum, ray light scattering, Raman effect.

Lenses and mirrors, combination of special third lenses, spherical and choromatic aberration and their connection. Microscope, Telescope, eye pieces, Projectors, photometry.

Electricity and Magnesium : Electrical charge, fields and potencials, gauss's theorem, Electrometers, Dielectrics and magnetic and their properties. Galvanometers. Wheatstone's bridge and applications potentiometers. Faraday's Laws of E.M. Induction, self and mutual inductance and their applications. Alternating currents, impedance and resonance. L.C.R. –circuits dynamos, motors, transformer's Seebeck, Feltier and Thomson effects and applications. Electrolysis, Hall Effect, Hartz experiment and electromagnetic waves. Partical accelerators cyclotron. Atomic structure's: electron-measurement of e and e/m. Measurement of Planck constant. Rutherford-Bohraton X rays. Bra-gg's Law, Moaley's Law nuclear structure's, fission and fussion, reactors. De broglie waves. Electron microscope, Electronics: Thermionic emission, diodes and trides, pndiodes and transistor's, simple rectifier, amplifier and oscillator circuits.

POLITICAL SCIENCE

SECTION'A' (1) (a) The State-Sovereignty. Theories of sovereignty .
(c) Theories of the origin of the States (Social contract, historical-evolutionary & Marxist).
(c) Theories of the functions of the State (Liberal Welfare and socialist).
(2) (a) Concepts-right, property, liberty, equality justice .
(b) Democracy – Electoral process, theories of Representation, public opinion, freedom of speech, the role of the press, parties and pressure groups.
(c) Political theories – Liberalism early socialism, Marxian socialism, Fascism.
(d) Theories of development and under development : liberal and Marxist.

SECTION'B' (1) Government- Constitution and constitutional Govt. Parliamentary and Presidential Government, Federal and Unitary Government. State and local Government. Cabinet Government. Bureaucracy.
(2) India (a) Colonialism and Nationalism in India. The national liberation movement and constitutional development.
(b) The Indian Constitution, fundamental rights, directive principles of State Policy, legislature, executive, judiciary including judiciary review, the rule of law.
(c) Federalism including Centre- State relations, Parliamentary system in India.
(d) Indian federation compared and contrasted with federalism in the USA, Canada, Australia, sNigeria, the Federal Republic of Germany and the USSR.

PSYCHOLOGY

1. Scope and methods :
   - Subject matter
   - Methods of collecting data in laboratory and field setting.
   - Nature of Psychological experiments.
2. Development of behaviour.:
   - genetic factors in human development
   - environmental factors in human development

- structure and function of nervous system : Central, peripheral and automatic : endocrine glands.

3. Motivation and emotion :
   - nature of motivation
   - classification of motives
   - approaches to human motivation: psychoanalytic humanistic, homeostatic.
   - techniquest of measuring motivation
   - frustration and conflict of motives
   - nature of emotions
   - psychological correlates of emotions
   - expression of emotions

4. Learning :
   - nature of learning process
   - classification conditioning and operant conditioning
   - perceptual learning
   - learning and motivation
   - transfer of training
   - verbal learning : procedures and significance of task characteristics.

5. Remembering and forgetting :
   - nature and theoretical approaches
   - measurement of retention
   - retroactive inhibition
   - factors influencing forgetting
   - study if short-term memory
   - constructive nature of memory

6. Perception
   - nature
   - perceptual organization
   - perception of form, colour and depth
   - perceptual constancy and illusion
   - role of motivational and social factors in perception.

7. Thanking :
   - its nature
   - language and thinking
   - concept formation
   - problems solving
   - inductive and deductive reasoning
   - creative thinking

8. Intelligence:
   - its nature, theories of intelligence
   - factors influencing intelligence
   - factors influencing intellectual development
   - measurement of intelligence

9. Personality :
   - its nature
   - trait vs. type approach
   - biological and socio-cultural determination of personality
   - personality assessments techniques and types of tests

10. Socialization :
   - meaning and nature of socialization
   - factors influencing socialization, socialization patterns in India
   - socialization and development.

11. Groups :
   - nature and types of groups
   - structure of groups
   - confirmity , communication, social facilitation and decision making in groups.

12. Leadership :
   - its nature
   - functions of leader
   - theories of leadership style

13. Attitudes :
   - its nature, components of attitudes
   - interpersonal and inter group attitudes
   - factors influencing attitudes change.
   - Measurement of attitudes.

14. Social perception :
   - determination of social perception
   - personal perception
   - perceptual defence.

15. Abnormal behaviour :
   - criteria of abnormality
   - dynamics of abnormal behaviour
   - stage of psycho-sexual development

16. Coping and adaptation :
   - types of defence- mechanism
   - reactions to frustration, conflict and stress.
   - Coping with stress.

17. Types of mental disorders :
   - psychoneurosis, neurosis, hysteria, obsessive compulsive, phobia
   - psychosis, schizophrenia, paranoid reactions, manic depressive
   - treatment of mental disorder.

SOCIOLOGY

Concept : race and culture, human evolutions, phase of culture, culture change-culture contact acculturation, cultural relaticism, society, groups status, role, primary , secondary and reference groups ,community and association, social structure and social organization, structure and function, objective facts, norms, values and belief system, sanctions deviance, socio-cultural process – assimilation, integration, cooperation, competition and conflict, social demography. Institutions, kinship system and family, economic system of simple and kinship usages, rules of residence and decent, marriage and family, economic systems of a simple and complex societies and ceremonial exchange market economy, political institutions in simple and complex societies, religion in simple and complex societies. Logic religion and science. Practices and organizations. Social stratifications caste, class and estate.

Communities: Village, town, city region.

Types of society: Tribal, agrarian, industrial, post-industrial.

Constitutional provision: regarding scheduled castes and Scheduled tribes.

ZOOLOGY

1. Cell structure and function, structure of an animal cell, nature and function of cell organelles, mitosis and metosis, chromosomes and genes, laws of inheritance mutation.
2. General survey and classification of non-chordates (upto sub class) and chorlates (upto orders) of following protozoa, Porifera, coelenterate, Plotyhelminthcs, Aschominthes, Annelidia, Arthropoda, Mellusca, Echnclemete and Chordata.
3. Structure, reproduction and life history of the following types :
   Amoeba, Monocystis, Plasmodium, Paramaedium, Sycon,Hydra, Obelia, Asciola, Teenia, Ascaris, Nerois, Phereime, loach prawn, scorpion, cockroach, bivalve, a snail, dalanglossus, an ascidians, Amphioxous.
4. Comperative anatomy of vertebrate : Integument endoskeleton,locomotory organs, digestive system, respiratory system, heart and circulatory system, urinogential systems and senses organs.
5. Physiology : Chemical composition of protoplasm, nature and function of enzymes, colloids and gydrogetion concentration, biological oxidation. Elementary physiology of digestion, excretion, respiration, blood mechanism of circulation with special reference to man, nerve impulse, condition and transmission across synoptic junction.
6. Embryology : Gametogenesis, fertilization, cleavage, Gastrulation, early development and meta-morphogenesis of frog, ascidian and retrogressive metamorphosis. Neotency, development of fetal membranes in chick and mammals .
7. Evolution : Origin of life, principles and evidence of evolution, speciation, mutation and isolation.
8. Ecology : Biotic and a biotic factors, concept of ecosystem, food chain and energy flow, adaptation of aquatic and desert fauna, parasitism and symbiosis, factors causing environment pollution and its prevention. Endangered species. Chronobiology and cireadiumrhythum.
9. Economic zoology : beneficial and harmful insects.

STATISTICS

1. Probability (25%) weight : Classical and axiomatic definition of probability with examples, conditional probability statistical independence, Bayes's theorem , discret and continuous random variables probability mass function and probability density function, cumulative distribution function, joint marginal and conditional probability distribution of two random variables, moments , moments generating function Chebichev's inequality, Binomian, poission hyergeomatric, negative binomial, uniform, exponential gamma , beta, normal and bivariate normal probability distribution, convergence in probability, weal law of large members, simple form of central limit theorem.

2. Statistical method : (25% weight) : Compilation, classification tabulation and diagrammatic representation of statistical data, measurement of central tendency, dispersion skwwness and kurtosis, measures of association and contingency correlation and linear regression involving two variables, correlation retion curve fitting.

3. Concept of a random sample and statistic, sampling distributions of XX2 , T and F statistics, their properties, estimation and tests of significance based on them. Order statistics and their sampling distributions in case of uniform and exponential parent distribution.

4. (Statistical inference (25% weight) : Theory of estimation, unbia sedness, consistency, efficiency, sufficiency Gramer-Rao have bound, best linear unbiased estimates, methods of estimation, methods of moments, maximum likelihood, leat squares, maximum X2 properties of maximum likelihood estimators (without thereof) simple problems of construction confidence intervals.

   Sampling theory and design of experiments (25%) weight :Principles of sampling, frames and sampling and sampling units, sampling and non-sampling errors, simple random sampling, stratified sampling, cluster sampling, systemic sampling, ration and regression estimates, designing of sampling surveys with reference to recent large scale surveys in India. Analysis of variance with equal number of observation per cell in one, two, and three way classifications, transformation to stabilize variance. Principles of experimental design completely randomizing, design randomized , block design. Principles of experimental design. Latin square design, missing plot technique, factorial experiments with confounding in 20 design balanced incomplete block design.

ANIMAL HUSBANDRY AND VETERINARY SCIENCE

1. **General :** Importance of livestock in Agriculture. Relationship between plant and Animal Husbandry. Mixed farming, farming, livestock and milk production statistics.
2. Generics : Elements of genetics and breeding as applied to improvement of animals. Breeds of indigeneous and exotic cattle, buffaloes, goats, sheep, pigs and poultry and their potential of milk eggs, meat and wool production.
3. Nutrition : Classification of feeds, feeding standards computation of ration and mixing of rations, conservation of feeds and fooder.
4. Management : Management of livestock (Pregnant and milking cows, young stock), livestock records, principles of clean milk production, economics of livestock farming, livestock housing.

VETERINARY SCIENCE :

1. Major contagious diseases affecting cattle and draught animals, poultry and pigs.
2. Artificial insemination, fertility and sterility.
3. Veterinary hygiene with reference to water, air and habitation.
4. Principles of immunization and vaccination.
5. Description, symptoms, diagnosis and treatment of the following diseases of :-

(a) Cattle : Anthrax, Foot and mouth disease, Haemorrhagic Septicemia Rinderpest, Black quarter, Tympanitis Diarrhoes Pneumonia, Tuberculosis,Jhons Diseases and disease of new born calf.

(b) Poultry : Coccidiosis, Rani khet, Fowlpox, Avian eukosisl, Marcks disease.

(c) Swine : Swine fever, hog cholera.

6. (a) Poisons used for killing animals.

(b) Drugs used for doping of race horse and the techniques of detection.

(c) Drugs used to tranquilize wild animals as well as animals in captivity.

(d) Quarantine measures prevalent in India and abroad and improvements therein.

DAIRY SCIENCE :

1. Study of milk, composition, physical properties and food value.
2. Quantity control of milk, common tests, legal standards.
3. Utensils and equipment and their cleaning.

CIVIL ENGINEERING

Statistic : Coplaner and multiplaner systems, freebody disgrams, centroid, second moment of plane figures, force and funicular polygons, principle of virtual works, suspension systems and catenary.

Dynamics : Units and dimensions, gravitational and absolute systems , MKS & SI units.

Kinematics : Rectilinear and curvilinear motion, relative motion, instantaneous centre.

Kenetics : Mass moment of inertia, simple harmonic motion, momentum and impulse, equation of motion of a rigid body rotating about a fixed axis.

Strength of Materials:

Homogenous and Isotropic media, stress and strain, elastic constants ,tension and compression in one direction, reveted and welded joints. Compound stresses-Principal stresses and principal strains, simple theories of failure.

Bending movements and shear force diagrams.

Theory of bending, sheer stress distribution in cross section of beams, deflection of beams.

Analysis of laminated beams and non-prismatic structures.

Theories of columns, middle third and middle fourth rules.

Three pinned arch, analysis of simple trams. Torsion of shafts combined bending, direct and torsional stresses in shafts.

Strain energy in elastic deformation, impact, fatigue and creep.

SOIL MECHANICS:

Origin of soils, classification, voi ration moisture content, permeability, compaction.

Seepage, construction of flow nets. Determination of bear strength parameters for different drainage and stress. Unconfirmed and direct shear tests.

Earth pressure theories- Rankine's and Coulomb's analytical and graphical methods, stability of slopes. Soils consolidation – Tarzaghi's theory for one dimensional consolidation, rate of settlement and ultimate settlement. Effective stress pressure distribution in soils, soil stabilization. Foundations-bearing capacity of footings piles , wells sheet piles.

Fluid Mechanics: Properties of Fluids.

Fluid statics- pressure at a point, force on plance and curved surfaces, buoyance-stability of floating and submerged bodies, dynamics of fluid flow-Laminear and turbulent flow, vortices, flow net.

Fluid flow measurement.

Dimensional analysis-Units and dimensions, non-dimensional numbers, Buckingham's pitheorm, principles of similitude and application.

Viscous flow-flow between static plates and circular tubes, boundary layer concepts, drag and lift.

Incompressible flow through pipes-Laminar and turbulent flow, critical velocity , friction loss, loss due to sudden enlargement and contraction, energy grade lines.

Open channel flow, uniform and non-uniform flow, specific energy and critical depth, gradually varied flow, surface profiles, standing wave flume. Surges and waves.

Surveying.

General principles, sign conventions, surveying instruments and their adjustments recording of survey observations plotting of maps and sections, errors and their adjustment.

Measurement of distance, directions and heights, correction to measured length, and bearings, correction for local attractions, measurement of horizontal and vertical corrections.

Chain and compass survey, theodolite and tacheometic traversing, traverse computation, plane table survey solution of two and three points problems, contuse surveying

Setting out directions and grades, types of curves.

ELECTRICAL ENGINEERING

Primary and secondary cells. Dry accumulators, solar, steady state analysis of D.C. and A.C. networks, network/theorems. Cells network functions laplace techniques, transient response, frequency response, three phase networks, inductivity coupled circuits.

Mathematical modeling of dynamic lunear systems transfer functions, block diagrams, stability of control systems.

Basic methods of measurements, standards, errors analysis, indicating instruments, cathodes ray oscilloscope, measurement of voltage, current, power resistance, inductance capacitance, frequency, fime and flux, electric meters.

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Vaccum based and Semi conductor devices and analysis of electronic circuits, single and multistage audio, and radio small signal and large signals amplifiers, oscillators, and feed back amplifiers, waves shaping circuits, its and time base generators multivibrators and digital circuits, modulation and demodulation circuits . Transmission line at audia , radio and U.H. frequencies, wire and radio communication.

Generation of e.m.f. and torque in rotation machine motor and generator characteristics of D.C. synchronous and induction machines, equivalent circuits, commutation. Starters, phasor, diagram losses, regulation, power transformers.

Modelling of transmission lines, steady state and transient stability, surge phenomena and insulation co-ordination protective devices and schemes for power system equipment.

Conversion of A.C. and D.C. and D.C. to A.C. controlled and uncontrolled power, speed control techniques or drivers.

MECHANICAL ENGINEERING:

Statics Simple applications of equilibrium equations.

Dynamics Simple applications of equations of motion. Simple harmonic motion. Work energy power.

Theory of Machines. Simple example of links and mechanism. Classification of gears, standards gear tooth profiles. Classification of nearrings. Function ofly wheel. Types of governors. State and dynamic balancing. Simple example of vibration of bars. Whirling of shafts.

Mechanics of sold is : Stress ,strain, Hook's Law, elastic model, bending moment and shearing force diagrams for beams. Simple bending and torsion of beams. Spring, thin walled cylinders. Mechanical properties and material testing. Manufacturing science.

Mechanism of metal cutting, toll like, economics of machining cutting tool materials. Basic machining process, types of machine tools, transfer lines, shearing drawing, spinning , rolling, forging, extrusion. Different types of casting and welding methods.

Production management:

Methods and time study, motion economy and work space operation and flow process charges. Product design and cost selection of manufacturing process. Break even analysis. Site selection. Plant layout. Materials handling selection of equipment for jobs shop and mass production. Scheduling, despatching, routing.

Thermodynamics:

Heat work and temperature. First and second laws of thermodynamics. Cannot, Rankine, Otto and Diesel cycles.

Fluid Mechanics:

Hydrostatics. Continuity equation. Bernoullis theorem. Flow through pipes. Discharge measurement. Laminar and turbulent flow, concept of boundary layer.

Head transfer:

One dimensional steady state conduction through wells and cylinders. Find concept of thermal boundary layer. Heat transfer co-efficient. Combined heat transfer sufficient, heat exchangers.

Energy conversion:

Compression and spark ignition engines. Compressed fans and blowers, hydraulic pumps and turbines. Thermo turbo machines, boilers. Fallow of steam through nozzles. Out of power plants.

Environment control:

Refrigeration cycles, refrigeration equipment is operation and maintenance, important refrigerants. Psychometrics comfort, cooling and dehumification,

EDUCATION

1. Principles and practice of education:
   1. Definition, scope and function of education.
   2. Aims of education.
   3. Agencies of education: Family, School, Society, Religious Institutions and State.
   4. Curriculum: Principles of curriculum construction.
   5. Co-curriculum activities.
   6. Freedom and discipline.
   7. Method of teaching : Logical and psychological
   8. Play way in education : Kindergarten system. Montessori method, dalaton plan, project method.
   9. Contribution of : Rouseau, Pestalozzi, Troebal, Harbard, Montessori, Dewey, Tagore, Gandhi, Aurobindo, to educational theory and practice.
   10. Teacher : his qualification and functions.
   11. Reward and punishment.
2. Educational psychology :
   1. Psychological basis of mental life.
   2. Different stages of individual's life development, the principal and distinctive characteristics of each stage physiological, mental (intellectual and emotional) with particular reference to childhood and adolescence.
   3. Learning : Kind of learning, skill and knowledge cooperation and competition, transfer to training imitation and habit formation, the learning process, methods of self learning and learning in a group, maturation and motivation in learning, nature, theories, laws and methods.
   4. Memory, forgetting, imagination,
   5. Interest and attention, mental work and fatigue.
   6. Intelligence, its nature, theories of intelligence, assessment of individual's achievement and performances, improved types of assessment.
   7. Sensation and perception.
   8. Current problem in education.
3. Primary education (Detailed study)
   a. Aims
   b. Objectives
   c. Problems and their solutions.
   d. Historical background of primary education

4. Higher education (Detailed study of university , adult, technical and women's education at different stages and problems of urban and rural areas)
   a. Aims
   b. Objectives
   c. Problems and their solutions
   d. Historical background of higher education

5. All the above topics should be studied in relation to :-
   a. Finance
   b. Attendance
   c. Accommodation
   d. Control of management
   e. Teaching personnel
   f. Curriculum
   g. Evaluation

ANTHROPOLOGY

FOUNDATION OF ANTHROPOLOGY

1. Meaning and scope of Anthropology and its main branches.
2. Community and Society Institutions, group and association culture and civilization band and tribe.
3. Marriage – The problems of universal definition, incest and prohibited categories, preferential forms of marriages, marriage payments, the family as the corner stone of human society, universality and the family , functions of the family, diverse forms of family- nuclear, extended, joint etc. stability and charge in the family.
4. Kinship-Decent, residence, alliance, kinds terms and kinship behaviour, lineage and clan.
5. Economic Anthropology – Meaning and scope, modes of exchange, barter and ceremonial exchanges, reciprovity and redistribution, market and trade.
6. Political Anthropology – Meaning and scope. The locus and power and the functions of legitimate authority in different societies. Difference between State and Stateless political system. Nation building process in new State, law and justice, in simpler societies.
7. Origin of religions, anism and animatism. Difference between religions and magic. Totemism and Tabbo.
8. Field work and fieldwork tractions in Anthropology.
9. Foundations of theory of organic evolution.
10. Fossil evidence for human evolution, Dryopithecus, Ramapithecus, Australopit Kecines, Homo erectus (Pithecan-thropines), Home Sapiens neandertahllaensis and Homo sapiens.
11. Genetics- Definition. The Madalian principles and its application to human population.
12. Technique, method and methodology distinguish.
13. Meaning of evolution- biological and socio-cultural. The basic assumptions of 19th Century evolutionism.The comparative method contemporary trends in evolutionary studies.
14. Distribution of racial and linguistics elements in Indian population.
15. The basis of Indian system. Varna, Ashram Purusha tha, Caste, Joint Family.
16. Ethnographic profiles of Indian tribes, racial linguistic and socio-economic characteristics.

PUBLIC ADMINISTRATION AND MANAGEMENT

ADMINISTRATIVE THEORY

Nature and scope of Public Administration, its role in developed and developing societies, Development Administrative and Comparative Administration, environmental influences-social, economic, cultural, political legal and constitutional.

Theories of organization concepts of organization. Authority, hierarchy span of control, unity of command line and staff, centralization and decentralization delegation and head quarters and filed relationships.

The Chief executive.-Leadership decision making, communication, coordination-supervision and motivation.

Personnel.- Central personnel agencies, recruitment, training, promotion, employer, employee relations.

Accountability and control.-Executive, legislative, judicial, citizen and administration. Techniques of administrative improvement – O & M work study, performance budgeting public administration in the Modern State.

INDIAN ADMINISTRATION.

Frame work. – Constitution, federation, planning, parliamentary democracy, political executive at Central, State and local levels.
Structure of administration, Secretariat, Field , Organizations, Boards and Commissions.

Public services.-All India Services, Central Services, State Services, local Civil Services, Central Personnel agencies, Public Service Commissions, Procedures of works in Government.

Control of public expenditure.- Role of Finance Ministry/ Department/Legislative Committees, Comptroller and Auditor General. Machinery for plan formulation at National and State levels. District Administration, role of the District Collector, local Government, rural and urban, Panchayati Raj, Public Undertakings, forms, management and problems. Relationship between Political and permanent executive. Generalist and specialist in public administration. Corruption in public administration.

People's participation in Administration.

Redressal of Citizen's grievances, Administrative reforms.

ENGLISH LITERATURE

Candidates will be expected to show a general knowledge of the History of English Literature from the time of Chaucer to the end of the reign of Queen Victoria, with special reference to the works of the following authors :-

Shakespeare, Milton, Dryden, Johnson, Wordsworth, Keats, Dickens, Tenyson, Arnold and Hardy. This will also require first-hand reading of the texts prescribed and will be designed to test the candidates critical ability.

1. Skakespeare - As you like it.

2.	Milton	-	Paradise Lost.
3.	Worksworth	-	The Prelude.
4.	Dickens	-	David Copperfield.
5.	Hardy	-	Jude the Obscure.
6.	Keats and Among School Children.	-	Easter 1916, The second coming,
7.	T.S. Eliot	-	The Waste Land.
8.	D.H. Lawrence	-	The Rainbow.

ARCHITECTURE

SUBJECT LISTED IN THE FIRST STAGE OF THE COURSE.

1 Architectural Design :- Applying the knowledge gained in other subjects and to design buildings of making medium complexity e.g. Schools, Colleges, Dispensaries, Shops and House etc. and present them in graph form.

2 Building Construction :- Knowledge of various methods of building construction of medium complexity with timber stone bricks, concrete etc. including foundation , walls, roofs, staircase, joining and finishes.

3 Building Materials and Science : - Knowledge of basic building materials and their behavior such as bricks, stones, metals and timber and finishing materials. Effects of climate on built environment to be able to design for comfortable conditions.

4 Architectural Drawing and Graphics :- Ability to present in Graphic form all elements of design – Study of shades and shadows, textures, tones, colours, geometrical forms , perspectives and projections, free hand drawing and rendering.

5 History of Architecture :- Study of various styles of Architecture and methods of construction through the ages in the world with emphasis of Indian Architecture.

6 Workshop Practice :- Ability to make building models with various materials such as Card-Board, wood, plastics, plaster of paris and metals. Ability to make simple joints in timber pipes and other materials.

7 Landscape, Design :- Understanding of Landscape elements like trees shrubs, plants, water, rocks and development of landscape planning and application in architectural design.

8 Structural Mechanics and Theory of Structures :-Understanding the structural concepts and behavior of structural elements, simple calculations for columns, beams frames, footings, slabs walls in concrete, steel timber.

9 Surveying and Leveling:- Understanding of various survey and leveling instruments, carrying out surveys of land of medium complexity and preparation of survey plants.

10 Building Service & Equipment:- Study of and designing for Water Supply, drainages, sewerage disposal, electricity supply, wiring and lighting for buildings.

11 Humanities:- Study of Sociology, Economic and Culture as applicable for design of human settlements.

12 Estimating and Costings:- System of taking out quantities and estimating for all trades involved in construction of medium complexity.

13 Principles of Human Settlement:- Man and environment, biological and behavioural response to human settlement. Ancient texts and treaties on settlement and area planning in India. Human settlements during ancient medival and modern periods in India. Europe and other parts of the world. Characteristics of human settlements built by Muslim and Hindus rulers in India

SUBJECT LISTED IN THE SECOND STAGE OF THE COURSE.

1. Architectural Design, Planning and Thesis: Design of complicated buildings and Campus involving analytical studies of buildings and spaces from sociological. Economic and Cultural points of view, such as Universities, Industrial Estates, Housing Schemes etc. Thesis on a subject requiring detailed analytical study to lay down validity and design criteria presented in graphic form, models and report. Thesis may also be on research projects presented as a written report.

2. Building Construction Materials and Specification :- Study of Advanced building construction methods with new materials such as plastic, metals, synthetic boards and latest techniques in use of concrete.

3. Building Sciences & Services : - Study of Accounts , Air-conditioning, Heating, Cooling Mechanical installations, five control water supply and drainage system for complicated buildings.

4. Town Planning Theory :- A general understanding of Town planning principles as they have evolved through the age.

5. Professional Practice :-The examination in professional practice is designed to assess the knowledge, skill and maturity which fit the architect to fulfill his professional duties and his understanding of the management of an office organization of such as a purpose. The syllabus should cover the following areas of study. General principles of Indian Contract Act : Building Contracts generally, conditions and form of contract, administration of contracts , principles of arbitration, Indian Arbitration Act, 1940. Valuation of properties, architectural competitions, encasement of properties, report writing, codes of practice, conditions of engagement, duties and responsibilities of an architect in relations to owner contractor, related professional and public, Indian Standards & Codes of Practice.
(Planning and Building Legislation etc has been omitted because this is covered building By-Laws-items 6).

6. Building Bye –Law :- Study of building regulations to enable to design and Prepare drawings for submission to concerned bodies.

7. Structural Systems : Study of new structural technology such as space frames prestressing, shells and understanding of the limitations and scope of these techniques.
Calculations for these techniques are not expected
Electives such as :-
   (a) Housing
   (b) Urban Design
   (c) Interior Design
   (d) Building Management
   (e) Landscape Design

(f) Urban Planning

Intensive study of one or more of the subjects offered as elective depending upon the expertise available to an institution. The list of the subject may be enlarged but they should be related to Architecture.

MEDICAL SCIENCE

I. GENERAL MEDICINE/PAEDIATRICS.

2. INFECTIOUS DISEASES :- Common infectious diseases, causative organism, pathogenesis, vlinical features diagnosis & management.
3. DISEASES OF RESPIRATORY SYSTEM.-Bronchial asthma, pneumonias, Tuberculosis, Pleustry-their aetiology, pathogenesis, diagnosis & management.
4. DISEASES OF CARDIO VASCULAR SYSTEM.-Cardiac Failure, Hypertension, Ischaemic Diseases of the Heart, Rheumatic Heart Diseases-their aeitology, pathogenesis diagnosis and management.
5. DISEASES OF GASTROINTESTINAL SYSTEM.-Diseases of Liver- Hepatitis, Hepatoma, Absecesses of Liver. Diseases of Pancreas _ Acute and chronic Pancreatitis.Diseases of Stomach & Intestines _ Peptic Ulcer, Oesophagitis, Worm Infectations, Malaborption Syndromes, Abdominal Tuberculosis.
6. DISEASES OF GENITOURINARY SYSTEM.- Acute and chronic Pyelonephritis, Acute and Chronic Glomerulonephritis, T.B. of kidney Gystitis Urethritis.
7. ENDOCRINES .- Diabetis Mellitus,Thyroiditis, Hyper and hypothyroidism, Hyper and Hypoadreralism.
8. MUSCULUSKELETAL SYSTEM.- Rheumatiod Disorders, Gout.
9. DERMATOLOGY.- Common skin infections and disorders.
10. PSYCHIATRY.- Disorders of mood-anxiety & depression.

PAEDIATRICS.

1. Nutritional Disorders in Children-Marasmos, kwashiorkor.
2. Immunisation-U.I.P. Schedules of Immunisation, vaccines.
3. Tuberculosis in Children.
4. Diarrhoea & Dehydration in Children- common causes disgnosis in infants & young children, management and prevention.
5. Breast feeding - Mother's milk-its advantages

II. PREVENTIVE AND SOCIAL MEDICINE :

1. Concept of Disease Prevention and Epidemiology.
2. Epidemiology of Communicable Diseases and some Non-Communicable Diseases.
3. National Programmes.
4. Primary Health Care-Concept, Health formally by 2000 AD.
5. Nutrition- Balanced diet, common nutritional disorders.
6. Health Care for Special Risk population-Material health, child health.
7. Environment Health.
8. Occupational Health and related schemes like ESIS.

III. PATHOLOGY/MICROBIOLOGY:

1. General pathology :-
   - (i) Inflammation and Report.
   - (ii) Neoplasia
   - (ii) Diseases of red cell and bleeding disorders.
   - (iii) Diseases of white cells and lymph nodes.

1. Systemic pathology :-
   (i) Respiratory System.
   (ii) Liver and biliary Tract.
   (iii) Gastrointestinal Tract.
   (iv) Female Genital Tract.

1. Bacteriology :-
   (i) Important bacteria that cause infectious diseases.
   (ii) Importance of antibiotic sensitivity tests.
   (ii) Hospital acquired infection and their prevention.
   (iii) Commonly used media for culture of organisms.

2. Virology :-
   HIV, Hepatitis Virus, A.B. C. D.E. Polio Virus, Rabies Virus, Viral Hemorrhagic fevers

3. Parasitology :- Malaria and Worm Infestations.

4. Serology :- ELISA, Widal Test, VDRL Test.

5. Mycology :- Common fungal skin infections.

IV. FORENSIC MEDICINE.

1. Injuries - Simple and Grievous, types of injuries, probable weapon inflicting the injury, firearm injuries, examinations of an Injured persons.
2. Alcoholism - Levels of intoxication, examination of an intoxicated person.
3. Rape - Attempt to rape, rape committed on minor, examination of a victim of rape, examination of the accused, criminal codes.
4. Death - Examination of a dead person, nature of death whether accidental homicidal or suicidal, time and death.
5. Poisonings - Commons household poisons, snake bite.

V. GENERAL SURGERY/ORTHOPAEDICS:

1. Trauma - Soft tissue injury, head injury, heamothorax, abdominal injuries, band injuries and burns.
2. Infections - Abscess, cellulites, and cold abscess.
3. Skin and Subcutaneous Tissues – Sebaceous cyst, dermoid cyst, lipoma Neurofibroma, warts, moles And melonoma, ulcers, carcinomas of skin, helmongiomas.
4. Hernias - Ingyinal hernia, femeral hernia, incisional hernia.
5. Stomach and Duodenum – Peptic ulcer, Ca stomach, Gastritis, Haemorrhagic, Ca Oesophagus.
6. Liver, Gall Bladder, Pancreas – Amoebic liver abscess, Cholelithiasis, Obstructive Jaundice, Acute Pancreatitis, Ca Head of Pancreas.
7. Intestine and Peritoneum – Intestinal Obstructions, Appendicitis, Abdominal, tuberculosis, peritonitis, Ca colon, Ca Rectum,Haemorrhoids.
8. External Genital Organs- Ca Penis, Phimosia, Hydrocale, Ca Testis.
9. Neck - Thyroditis, Ca throid, Multinodular Goitre.
10. Breast - Ca Breast, Breast abscess, Fibroadenomas.
11. Veins and Arteries - Various Veins, peripheral vascular diseases Aneurysms.
12. Kidney, Bladder and Prostate – Uninary tract Calculi, Hydronephrosis Cystitis, Ca blader,BPD, Ca prostand, Acute prostitis, Acute Retention of urine.

VI. ORTHOPAEDIC :-

1. Fractures – Classification , types , management.
2. Tuberculosis of joints and spine.

VII. GYNAECOLOGY/OBSTETRICS :

1. Diseases of Female Genital Tract. Acute vulvovaginitis, Cervicitis, Cervical dysplasic, Acute Salpingitis, Ca Cervix, Endometriocis, Uterine polyps, Ovarian cysts, Myomas of uterus.
2. Pregnancy – Trimesters of Pregnancy, Antenal care, Immunisation in pregnancy, Nutrition in Pregnancy.

FORESTRY

SECTION 'A'

1. Silviculture :
   General silviculture Principles, ecological and physiological factors influencing vegetation, natural and artificial regeneration of forests, nursery techniques, seed technology collection, storage, pretreatment and germination, establishment and tendings. Silviculture systems- clear telling uniform shafterwood, selection, soppice and conversion systems.

   Silviculture of some of the economically important species of India such as cedrus deodara, liformis, Acocia nilotica,Albizzia spp, Artocarpus spp, Anogessus spp, Bambusa spp, Casnarina equisetifolia, Dalbergia spp, Diptaerocarpus spp,Eucalyptus spp, Gmeline a rborea, Lagerstroemia spp, populus spp, Salmaloamalabacica, shorea robusta, tectona Grandis, Terminalia spp. Social forestry-objective, scope , necessity, agro-forestry extension forestry, recreation, forestry, peoples participation.

2. Forest Mensuration and Management :
   Methods of measuring – diameter, girth, height and volume of trees, form factor, volume estimation of stand sampling methods, yield calculation current annual increment, mean annual increment, sample plots, yield and stand tables, scope and objective of forest inventory, serial survey and remote sensing techniques.

   Forest management – Objective and principles, techniques sustained yield relation, normal forest, growing stock, regulation of yield-methods and application, working plans-preparation and control.

3. Forest Utilization:
   Logging and extraction technique and principles, transport storage and scale. Minor forest product definiftion and scope, gums, resins, cleoresins, fibres, oilseeds, nuts, rubber, canes, bamboo medicial plants charcoal, apiary, sericulture,lac and shellac, tassar silk, katha and bidi leafs. Collection processing and disposal of minor forest products.

   Wood technology,anatomical, physical and mechanical properties of wood, defects and abnormalities, composite and other wood products, pulp paper rayon. Saw milling, wood seasoning and preservation.

SECTION 'B'

1. **Forest Protection :**
   Injuries to forest-abiotic and biotic insect pests and diseases general forest protection against fire, insect pests and diseases biological and chemical controls.

2. Forest ecology and Forest Biology.

Biotic and abiotic components of forest ecology, forest ecosystem forest community concepts, vegetation concepts, ecological sucession and climax primary productivity nutrient cycling and water on relations, physiology in stess environments (drought water, logging, alkalinity and salinity), composition of forest types in India, species composition and associations, dendrology , taxonomic classifications, identification of species principles and establishment of herbaria and arboreta. Principles and concepts of tree improvement, methods and techniques , exetics.

Ecology and biology of wildlife, principles and techniques of managements, endangered species, wildlife conservation.

SECTION 'C'

1. Forest Economics Policies and Legislation :

Fundamental principles of forest, economics, cost benefits analysis, estimation of demand and supply, assessment and projection of market structures, role of corporate financing, socio-economic analysis of forest productivity and attitudes.

History of forest development, India forest policy of 1894 and 1952, National Commission on Agriculture-report on forestry, Constitution of Wasteland Development Board India Council of Forestry Research and Education.

Forestry Laws, necessity general principles, India Forestry Act, 1927 Forestry Conservation act, 1980, Wild life (Protection Act, 1972.)

2. Forest Surveying and Engineering:

Different method of surveying- Chain prismatic compass paintable and topographic surveys, area calculation, maps and map reading.

Basic principles of forest engineering Building materials and construction, Road objects and classification general principles, construction Bridges-general principles, objects types simple design and construction of timber bridges.

3. Forest Soils and Soil Conservation :

Forest soils classification factors affecting soil formation physical and chemical properties. Soil conservation-definitions causes of erosion types-wind and water erosion, conservation and management of eroded areas, windbreaks shelter boots fixation of sand dunes, reclamation of alkaline a saline water logged and other waste lands. Watershed management-objective and methods.

AGRICULTURAL ENGINEERING

(i) Surveying – Chain surveying, plain table surveying, method of leveling and reduced level calculations, contour surveying, methods of contouring , properties of contours.

(ii) Soil Mechanic – Origin of soil, classification, voids ratio, moisture content, permeability, compaction, seepage construction of flow nets, determination of shear strength, earth pressure theories-Rankine's and Coulomo's analytical and graphical methods, stability of slops, soil consolidation- Tezzaghi's theory for one dimensional consolidation, pressure distribution in soil and soil stabilization.

(iii) Farm Power and Machinery- Construction of different kind of I.C. engine Ignition, fuel lubricating, cooling and governing systems of I.C. engine, chasis transmission and steering, farm machinery for primary and secondary tillage, seeding, Harvesting and Threshing equipments.

(iv) Irrigation and Drainage Engineering- Soil-Water-Plant relationship, sources and types of Irrigation. Duty of water consumptive use, water requirement of the crop leveling and layout of irrigation systems, design and construction of canals, field channels, pipelines, hand gates, diversion boxes structure and road crossing, occurrence of ground water, hydraulics of wells, type of wells, their construction, drilling method, well development, testing of wells, drainage definition-cause of water logging, methods of drainage, design of surface and sub surface drainage systems, spillways and it's types and objects.

(v) Soil and Water Conservation Engineering-Definition and scopes of soil conservation, mechanics and types of erosion, their causes, hydrologic cycle, rainfall and runoff, erosion control methods-Biological and engineering, designs of Soil Conservation structures-terrances, bunds outlets and grassed waterways, principles of flood control, design of farm, ponds and earth dams, stream bank erosion and it's control, wind erosion and it's control, principles of water shed, management river training works, object and methods.

(vi) Agriculture Process wing (Post Harvest Technology)-(a) Grain drying-Drying and need to dry grains, early harvest and mechanical drying, methods of grain drying, factors affecting drying ,sack dryer, batch dryer rotary dryer, L.S.U dryer, grain drying theory. (b) Parboiling and milling of rice- Parboiling, basic concept and principle, methods of parboiling, rice melling, huller rice mill, mini modern rice mill, rice whitening and it's types. (c) Processing and Preservation of seeds – Unit operation in seed processing, preparing seed for precessing, air-screen cleaner, gravity separator, shape separator, width and thickness separators, seed treaterment-disinfection and protection , type of seed treater, slurry treater, calibrating slurry treater for the correct dosage, storing bins for treated seeds, contamination of seeds and seed losses, safe seed storage.

(vii) Public Health Engineering : Quality and quantity of water required for public water supplies, water purification process, water distribution systems , sanitation and sanitary appliances, construction and maintainance of sewage disposal and sewerage system, types of sewerage system, types of sewage system- Oxidation ponds, simple sediments, recirulation and high rate in filteration, septic tanks , in hood tanks.

(viii) Farm buildings and structure : Planning of farmstead and farm residence, farm fencing, farm shelters, dairy barns types, poultry house type, buildings material for farm structure, storage structure in the farm, siltype, food grain storage structure and its design farm electrification.

(ix) Applied Mechanics : Composition and resolution of forces law of moments, equilibrium of force, centre of gravity moments of inertia, analysis of perfect trams balancing of rotating bodies, transmission of power by belts and ropes.

(x) Strength of Materials : Stress, strain, Hooke's law, Youngs Modules of Modules of Elasticity, banding moment and shearing force-diagrams and riveted joints.

(xi) Buildings Construction : Foundation-types, brick mansonary type, stone masonary –type, plastering, requirement of good stairs, type of stairs, lintels, R.C.C. structure determination of neutral axis, balanced section , under and over reinforced section, single reinforcement and double reinforcement, design of simply supportedslabs, continuous slabs and two way slabs, design of simple supported. (Single reinforce and double reinforce) beams of T. beams.

ELECTRONICS AND COMMUNICATION ENGINEERING.

SEMICONDUCTOR ELECTRONICS: Energy Levels and Energy Bands. Conduction in Metals. Conduction in Semiconductors. Semiconductor Diode and characteristics, VI characteristics and circuits. Tunnel Diode and its characteristics. The Photoelectric effect. Photodiodes.

TRANSISTORS: Transistor Characteristics. Common Base, Common Emmiter and Common Collector Characteristics. Details of currents and voltages in a Transistor. The Transistor Alpha. Transistor Biasing and its circuits. Thermal Stabilization and Thermal Runaway. Transistor as an Amplifier. Transistor Amplifier circuits. Small Signal Low Frequency transistor Models. High Frequency Transistor Models. Field Effect Transistors and its characteristics. FET Amplifiers Circuits. MOSFET, UJT.

NETWORK THEORY: Network Theorms; Thevenin's and Norton's Theorms and their circuits. Filter Design .L. Section, T Section and II Section Filter Design. Understanding Half Wave and Full Wave Rectification. Design of Power Supplies using Half Wave and Full Wave Rectifiers.

AMPLIFIERS AND OSCILLATORS : Classification of Amplifiers . The Feedback Concept. Voltage Series and Voltage Shunt Feedback. Current Series and Current Shunt Feedback. Basic Amplifier circuits. Types of Oscillators and circuits. Large Signal Amplifiers. Harmonic Distortion. Class A, Class B and Class AB Amplifiers. Push Pull Amplifiers. Audio Power Amplifiers.

INTEGRATED CIRCUITS : Basic Integrated Circuits. Masking, Etching and Diffusion of Impurities. Monolithic Circuits. Hybrid Circuits. FET Integrated Circuits. Integrated Diodes, Resistors, Capacitors and Inductors. Linear Integrated Circuits. Operational Amplifiers. Phase Locked Loops; Circuits and Practical Considerations.

SWITCHING AND LOGIC DESIGN: Digital Fundamentals. Number Systems. Boolean Algebra. GATE Networks. Registers, Counters, Flip-Flops as Memory Elements. Digital Circuits. Synchronous and Asynchronous Circuits. Pulse, Switching and Digital Network and Circuits.

DIGITAL COMPUTER FUNDAMENTALS: The Memory Element. Input Output Devices and Interfacing . Operations, Instructions and Microprogramming Techniques and Configurations. Computer Organization and Architecture. Microprocessors. The 8085 and 8086 Microprocessors. Operating Systems.

COMMUNICATION THEORY: The need for Modulation and Modulation Techniques. Noise in a Communication Channel. Noise Types and its Calculations. Principle of Amplitude Modulation. Generation of AM. Single Side Band Techniques. Frequency Modulation. Noise and FM. Generation of Fm.

COMMUNICATION SYSTEMS: Radio Receivers. TRF and Super heterodyne Receivers. Block Diagrams and explanation. AM Receivers, Block Diagram and characteristics. FM Receivers, Block Diagram and Characteristics. Comparison of AM and FM Systems. SSB and Independent Sideband Receivers. Communication Receivers.

ANTENNAS AND WAVE PROPAGATION: Electromagnetic Radiation. Propagation of Waves. The Electromagnetic Spectrum. Basic Concepts of Antennas. Wire Radiator in Space. Terms and Definition of Antennas. Antenna Coupling. High Frequency Antennas. Microwave Antennas. Wideband Antennas.

Wave Guides. Circulators and Resonators. Attenuators Auxillary Components. Smith Chart and Applications.

PULSE AND DIGITAL COMMUNICATION : Information Theory. Shannon's Theorem. Coding. Coding Techniques. Noise Figure. Principles of Pulse Communication. Pulse Modulation and its types. Digital Communication Technology. Data Communication Systems. Data Sets and Interconnection. Networking and its control requirements.

BROADBAND COMMUNICATION : Multiplexing. Time Division and Frequency Division Multiplexing. Short Haul Systems. Medium Haul system that includes fibre optics, micro wave links and tropo sphere Scatter links. Long Haul Systems that includes submarince Cables and Satellite Communication. Elements of Long Distance Telephony. Routing. Signalling Systems. Modern Trends in Communication. Pagers and Cellular Technology.

MICROWAVE ENGINEERING: Microwave Triodes, Multicavity Klystron, Reflex Klystron, Operation and Practical Considerations. Magnetron. TWT. Cross Field Amplifier. Backward Wave Oscillator.

MICROWAVE DEVICES AND CIRCUITS : Passive Microwave Circuits, Transistors. Integrated Circuits. Varactor and Step Recovery Diodes. Multipliers. Parametric Amplifiers. Tunnel Diodes and Negative Resistance Amplifiers. Gunn Effect and GUNN Diodes. Avalanche Effect and diodes. IMPATT,TRAPATT and PIN Diodes. Quantum Mechanical and Associated Devices. Fundamentals and Applications of MASERS. Fundamentals and Applications of CW LASER in Communication and Industry.

RADAR ENGINEERING: Basic Principles of Radar. Basic Block Diagram and Explanation. Pulsed Radar Systems. CW Doppler Radar. Moving Target Indicator. Airborne and Seaborne Radar. Phased Array Radar.Planar Array Radar.

TELEVISION: Television Fundamentals . Basic Black Diagram and Circuits. Worldwide Television Standards. Black and White TV Transmission and Reception. Colour TV Transmission and Reception

B. TECH. IN COMPUTER SCIENCE & ENGINEERING :

1. **Computer Organization & Architecture.**
   Basic Structure of Computers- Addressing Methods-Program Sequencing-The Processing Units-CPU-Bus-Input Output Organization-Main Memory-Evolution of Computers-Processor Design-Micro Programmed Control-Memory Organization.

2. **Logical Design.**
   Binary Systems-Fundamentals of Switching Theory-Boolean Functions – Combinational Logic (Logical OR/AND/NAND/NOR)

3. **Microprocessor and Applications**
   Microprocessor Architecture-Instruction Set-interfacing Input & Output Devices –Interrupts-Microprocessor Application.

4. **Computer Programming in C**
   Computer Programming Fundamentals-'C' Fundamentals-Operators & Expression-Input & Output-Flow of Control-Program Structures-Arrays & Pointers.

5. **Object Oriented Programming**

Object Oriented Paradigm & C++ - C and C ++ - Classes and Objects - Object Initialization and clean up- Dynamic Objects- operator Overloading-Inheritance-Virtual Functions-Stream Computation-Exception handling.

6. **Computer Graphics.**
Introduction-overview of graphics systems-Output Primitives-Attributes to Output Primitives- 2 Dimensional Transformation –Segments-Interactive Input methods-3 D Transformation.

7. **Software Engineering.**
Planning & Cost Estimation-Software Requirement Definition-Software Design Concepts-Implementation issues-Software Verifications.

8. **Data Structures.**
Introductions – Contiguous Data Structures-Non – Contiguous Data Structures-Trees Graphs-Sorting.

9. **Database Management System.**

Introduction-Data System Concepts-Physical Data Organization Network Model-Relation Models-Relation Query Language –Design Theory for Relation Database-Database Protection-Distributed Database System-RDBMS.

10. **Computer Networking.**
Introduction-Network Layers –OSI Model, Four Classes of Addresses –Internet Protocols-Routers-Switches-WiFi-WiMax Bluetooth-DSI-ISDN-VSATs.

11. **Computer Security & Digital Signatures.**
Introduction-Computer Security Fundaments-Network Security & Threats-Viruses-Worms- Phising- Pharming- Hacking -Public & Private Keys-Firewalls-Anti Virus-Prevention of Cyber Crime-Digital Signature.

12. **Information Technology Act-2001.**

HOME SCIENCE

1 A family set up and its housing needs:

(a) Selection and Planning accommodation for residential purpose for different Socio-economic levels.
(b) Beautifying a house, colour schemes, designs and floor decoration as a part of interior decoration.

2. A good home manager:

(a) Management skills and plans- Principles and Practices for both rural and urban societies.
(b) Cleaning and care of the house, use of different reagents in household management practices.
(c) Management of human resources-Men, Money and Materials- family budget savings, household accounts.
(d) Background of Indian home life and development of good family relationship at home.

3. Dress designing and clothing needs :

(a) Selection of clothing according to age , sex, vocation , seasons and climate, care of clothing.
(b) Knowledge about classification of fibres, physical and chemical tests.
(c) Stain removal and laundering methods, use and selection of water for laundering purposes.

4 Personal health and hygiene :

(a) Knowledge of human body parts and its care including the study of different organs and hormones.
(b) Air and water-their composition, source , pollution and purification.

5 The child and the family :

(a) Care of the child and the mother.
(b) Growth of the baby through the years.
(c) Delinquency and youth care.
(d) Sex education- and guidance and counseling.

6 Care of the sick at home :

(a) Basic nursing skills and qualities of a good nurse.
(b) A well equipped sick room and its equipment.
(c) Care and management of a patient.

7 First Aid and Health Education :

(a) Accidents and emergencies, and different types of bandaging, a First Aid Box.
(b) Common infectious diseases and childhood diseases-Signs, Symptoms, Care and Treatment.
(c) Health care and preventive measures, personal and public health point of view
(d) Marriage and family relationship, and Planning for future health of the family.

8 Basic Principles of Physico-Chemical changes of matter in relation to housecraft :

(a) Structure and functions of animal cells and tissues.
(b) Composition and functions of blood
(c) Understanding of different weights and measures commonly used at home.

9 Community Nutrition and Nutrition Education :

(a) Digestive System.
(b) Basic food groups and functions of food nutrients, caloric requirements of different age groups.
(c) Balanced diet and meal Planning, Preparation of therapeutic diets for different human ailments.
(d) Food spoilage, food adulteration, food preservation.

10 House as a Part of human society and the training for good citizenship :

(a) Role of human personality in a democracy.
(b) Role of Indian Womanhood in modern society.
(c) Rural and urban self-government- Public responsibilities of the Indian Community.

PHYSICAL EDUCATION

A. Principles and Management of Physical Education.

1 Nature and Scope of Physical Education and related concepts :
(i) Physical Culture
(ii) Physical Training
(iii) Recreation
(iv) Gymnastics
(v) Games
(vi) Sports
(vii) Play
(viii) Yoga

2 Sub-Disciplines in Physical Education :
(i) Sports' Psychology
(ii) Sports Medicine
(iii) Exercise Physiology
(iv) Biomechanics
(v) Kinanthropometry
(vi) Sports Training

2. Role of Physical Education in General Education.

3. Aims and objectives of Physical Education :
(i) Physical Development
(ii) Mental Develoment
(iii) Social Development
(iv) Motor Development Objectives

4. Growth and Development Stage, Characteristics Physical Activities during the period of childhood and adolescence.

5. Physical Activities for the aged : exercise and physiology of aging, loss of functional capacity with age, risk of exercise among the aged.

6. Physical Activities for the disabled : types of disability, programme for the disabled

7. Organizational Structure of Games and Sports in Schools, Colleges and Universities.

8 Types of Tournaments (i) Knock-out System (ii) League System (iii) Combination System.

9. Lay out of Play-field of the following Games and Sports and their basic rules (i) Kabaddi (ii) Kho-Kho (iii) Volleyball (iv) Football (v) Badminton (vi) Handball (vii) Netball (viii) Basketball.

10. Procedure for purchase of sports equipments and their proper care and maintenance.

11. Management of Track & Field Meet.

B. Anatomy, Physiology and Exercise Physiology.

1. Cell-Structure and Function, Concept of tissue, organ & system.

2. Skeletal System - Types of bones, names of various bones of the body, types of joints, postural defects-Kyphosis, Lordosis, Scoliosis, Knock-knee, Flat foot, Bowleg-nature, causes and correction.

3. Circulatory System-Heart and its structure, Blood Circulation-Systemic and pulmonary.

4. Respiratory System-Organs of the system, mechanism of respiration- Inspiration and Expiration.

5. Nervous System –Parts of the brain and their structure, spinal chord, reflex action.

6. Endocrine System – Meaning of Endocrine Glands, function & location of Pituitary, Thyroid & Adrenal Glands.

7. Muscular System- Various types of muscles , structure of muscle, effects of exercise on muscles, muscular contraction- isometric, isonic , is kinetic, eccentric, corsentric, static, nerve supply to muscles, motor unit, reciprocal innervations.

8. Effects of exercise on Circulatory System , Blood Pressure.

9. Effects of exercise on Respiratory System, Vital Capacity, Oxygen debt, Cardiovascular endurance.

C. History of Physical Education and Psycho-Social Aspects of Sports.

1. Development of Physical Education and Sports in India

   (a) Pre-Independence period:
   Contribution of H.C. Buck and James Buchanan and establishment of Physical Education Colleges.
   (b) Post-Independence period :
   (i) Establishment of National College and other Physical Education Colleges with special reference to West Bengal and the new trend in professional preparation.
   (ii) Sports institutions in India : Their objectives and functions- Ra Kumari Amrit Kaur Coaching Scheme, NS-N.I.S. (Netaji Subhas National Institute of Sports) S.A.I. (Sports Authority of India)
   (iii) Role of Central Advisory Board of Physical Education and Recreation.
   (iv) Composition and functions of All India Council of Sports.
   (v) Composition and functions of Indian Olympic Association

2. Olympic Movement :
   (i) Ancient Olympic Games
   (ii) Ideals and objectives of Olympic Movement
   (iii) Modern Olympic Games.

3. Psycho-Physical Unity of Man

4. Attention & Interest :

Attention : Definition, Characteristics, Types, Factors, Causes of inattention.
Interest : Definition, process of developing interest, relationship between interest & attention.

5. Instinct & Emotion :

Instinct : Definition, Types of instinct.
Emotion : Definition, Types, its implication in Sports.

6 Motivation : Definition, types, its role in Sports.

7. Personality : Definition, types and its development through Physical Education.

8. Physical Education as a Socialising force.

D. HEALTH EDUCATION, FIRST AID AND DIETIES

1. Meaning of Health Education

2. Major Areas of Health Education.
   (a) Health Service -Daily health inspection, medical inspection and follow-up, health records , clinic and health centre.

   (b) Healthful Environment-Healthful environment in Educational Institutions, Offices, Factories, Playground & Auditorium environment hygiene- lighting, ventilation, water supply and waste disposal.

3. Environment Pollution:Air , Water, Sound and Soil Pollution- Causes and Control.

4. Importance of Hygiene living- Personal hygiene, Care of skin, hair, ear, throat, teeth, eyes, feet, nose, healthy habits.

5. Mental Health-Problems of Maladjustment, minor mental disorders-their causes and precautions.

6. Safety Education- Safety at home , School, College, playground.

7. Prevention and control of communicable diseases- Malaria, Cholera, Common cold, influenza.

8. First-aid management- Sprain, dislocation, fracture, cramps, shock, wounds & bleeding, snake bite, drowning, Electric shock, burns & artificial respiration.

9. Basic Nutrients- Protein, Carbohydrates, Fats, Vitamins, Minerals and Water.

10. Need of Nutrients (a) Growth and Repair (b) Vitality and Fitness (c) Production of Calories for energy and warmth.

11. Quality of food-How and when to eat, diets of different age groups-Food preferences and sources of food.

12. Balanced Diet and Athletic Diet.

13. Malnutrition – Causes and Effects-Mid day Meal and Milk Programmes.

14. Drinks : Tea, Coffee, Alcohol- Adverse effects on health and performance. Drug abuse and tobacco-Adverse effects on performance and health.

E. SPORTS TRAINING AND THERAPEUTIC ASPECTS OF PHYSICAL ACTIVITIES.

1. Meaning of Sports Training, Conditioning , Warming-up and Cooling down.

2. Components of Physical Fitness ; Speed, Strength, Endurance, Agility, Flexibility.

3. Training Methods : Circuit Training, Interval Training, Fartlek Training , Weight Training.

4. Normal load, crest load, over load, principles of load.

5. Mechanical Principles Applied to Sports:
Motion, Laws of Motion, Lever and it's types, Equilibrium- its types and laws, Centre of Gravity, force and it's types, Centrifugal, Centripetal' friction and water resistance.

6. Exercise and Chronic Diseases : Osteoporosis, Obesity, hypertension, Diabetes, Cardiovascular diseases, Asthma.

7. Exercise Therapy : Corrective, Isotonic, Isometric and Resistance Exercise, Yogasana as Therapy and Massage Therapy.

8. Basic Principles of Electrotherapy , Hydrotherapy, Cry therapy, thermotherapy.

9. Basic Principles of Rehabilitation-Modalities and Relaxation Techniques.

TOURISM MANAGEMENT

A. Certificate in Tourism Management

1. Tourism Business

1. Definition, Nature, Importance, Components and typology to Tourism.
2. Concepts of Domestic and International Tourism recent trends.
3. Tourism as an Industry, visitor, tourist, excursionist.
4. Growth and development of Tourism in India
5. Impacts of Tourism-Economics, Social, Physical and Environmental

2. Tourism Products

1. Socio-Cultural Resources- Important historical/archaeological/biological sites.
2. Popular Religious Shrines/Centres-Hindu/Buddhist, Jain, Sikh, Muslim, Christian and others. Yoga, Meditation and other centre.
3. Classical Dances and Dance Styles-Centre of learning and performances. Indian folk dances.
4. Music and musical instruments-Different Schools of Indian music, status of vocal and instrumental music, new experiments.
5. Handicrafts of India as potential tourist resources.
6. Fair and Festival-Social, religious and commercial falls, festivals, promotional (Tourism) fairs, viz, kite festival, white water festival, snake best race etc.
7. Created tourist destinations : Academic, Scientific and Industrial Institutions.
8. Tourism resource potential in mountain with special reference to Himalayas : Resources and resource use- patterns in the past, present and future perceptive.
9. India main desert areas, their geological structure : development as desert tourism existing trends and facilities available ; desert safari and desert festival.
10. Coastal areas, beaches and Islands : Resources and resource use pattern.
11. Resource in Islands with special reference to Andaman and Nicobar Islands. Overview on Tourism Development Strategies.

3. Tourism Services Operations and Management

Course objectives :-
Students at the end of this course should be able to :
Formulate (Tailor make), tour, trek, raft and other tourist services programmes (from already identified/ existing itinerary, tariffs)
Work out quotation for such tailor- made programme
Deal with special tours, conference and convention tours

Plan new tours, trek and farting programmes
Establish contracts / negotiate rates with accommodation establishment transport and other tourists.

Course contents

- Definition and analysis of concepts of " Inclusive Tours " (IT).
- Opening and completing guest file
- Preparation of tour, trek, rafting and other tourist services.
- Dealing with tailor made tours, special tours and conference and convention.
- Itinerary formulation
- Formulating tailor made programmes
- Preparing quotation of tailor made programme.
- Assisting in laying out of Brochure and other publicity materials.
- Handling clients complaints.
- Costing of Package Tour.

4. Marketing in Tourism

Course Objectives :

- To enable students to gain knowledge and understanding of marketing in general.
- To enable students to gain knowledge understanding of tourism marketing.
- To enable students to gain appreciation of typical characteristics of tourism marketing.
- To acquaint and enable students to acquire knowledge on several activities and procedures of tourism marketing and application of tourism marketing methods.
- Students at the end of this course should be able to appreciate strategic and marketing tools in travel/tourism.

Course Contents

- General Marketing
- Marketing Philosophy in Tourism.
- Definition of Tourism Marketing.
- Fundamental characteristics of tourism and their implications in marketing.
- Main types of tourism marketing.
- Consumer behaviour and travel decision process.
- Market segmentation in tourism.
- Exploring the use of tourism marketing tools or marketing mix methods.
- Tourism marketing research.
- Formulation and development of tourism products.
- Role and functions of different PSUs and Private Sectors in Tourism Marketing.
- Distribution of tourist product.
- Tourism Marketing situation of India.

5. Information, Communication and Automation

1. Consumer Expectation and Service Legislation.
2. Computer Net Works- LAN and WAN, Communication media Net work in India.
3. Information technology : Fax, e-mail, use of data based internet, Reservation (Air, Railways, Hotels)
4. Market research : data collection interview, concept of system analysis and design basic idea related to Creation of Information system on tourism.
5. Devices of Computers and Communication, CPU, Memory Primary and auxiliary (Ram, Rom, Cache, Floppy disk, Hard disk, tape, CD Rom).
6. I/O devices- VDU Printer (Dot Matric , Inkjet, Laser, Line) Key-board, Mouse, Scanner.

6. Management Principles and Practices

1. Nature and functions of management.
2. Development of Management thought.
3. Co-operation.
4. Planning

5. Decision Making.
6. Organization.
7. Staffing /HRD.
8. Recruitment and Selection.
9. Placement and Induction.
10. Training and Development.
11. Purpose of Communication in Tourism.

7. Travel Agency Tour Business and Accommodation

1. Definition of Travel Agency/ Tour Operators.
2. Main Functions.
3. Organizational structure of Travel Agency and the Tour Operators.
4. Different types of Travel Agents and their responsibilities.
5. Procedure to become a travel agent and tour operator in India.
6. Role of Indian Air Line and Air India on the growth and management of tourism.
7. Role of the private Air Lines namely Sahara, Jet Airways, Vayudoot etc. in the growth and management of tourism.
8. Role of Indian Railways in the growth and management of tourism.
9. Tour operators/ Travel Agents and the tourism business.
10. Accommodation- types, Organization and Management.

8. Strategic Tourism Management

1. Relevant concepts and preaches for effective tourism development.
2. National Development Council Report on Tourism Development.
3. National Action Plan 1992 and subsequent changes.
4. New Policies on Tourism and Civil Aviation.
5. Tourist traffic and its improvising.
6. Destination development.
7. Sustainable development.
8. Eco-Tourism Policy.
9. Tourism Policy analysis.
10. Tourism legislation a necessary.
11. Consumer Expectation and Service Legislation.

HOSPITALITY AND HOTEL ADMINISTRATOR

A. National Council Component.

1. Foundation Course in Food Production.
2. Foundation Course in Food & Beverage Service.
3. Foundation Course in Front Office.
4. Foundation Course in Accommodation Operations.
5. Application of Computers.
6. Hotel Engineering.
7. Nutrition and Principles of Food Science.
8. Accountancy.
9. Communication.

B. National Council Component.

1. Food Production Operations.
2. Food & Beverage Operations.
3. Front Office Operations.
4. Accommodation Operations.

5. Food & Beverage Controls.
6. Hotel Accountancy.
7. Food Safety and Quality.
8. Industrial Training.

C. National Council Component.

1. Advance Food Production Operations.
2. Advance Food & Beverage Operations.
3. Front Office Management.
4. Accommodation Management.
5. Food & Beverage Management.
6. Facility Planning.
7. Financial Management.
8. Strategic Management.
9. Research Project.

LIBRARY AND INFORMATION SCIENCE.

PAPER- I Library, Information and Society.

Objectives :

1. To introduce students to the field of library and information science.
2. To introduce students to the concepts of information society.
3. To provide an overview of the entire programme.

UNIT-I Library as a Centre for information, Culture and Education.

Library Definition, objectives and services.
Library as a social institution, History of Libraries/information centers and development of librarianship as service profession.
Eminent thinkers on libraries.

Unit-II Laws of library Science.

Normative Principles, Basic laws and Fundamental laws. Five laws of Library Science and their applications.

UNIT-III Types of Libraries their role and functions.

National and Copyright- Libraries.
Academic Libraries : University, College and School Libraries
Public libraries : UNIECO- Public Library Manifesto
Special Libraries and Information Centres
Libraries for Special groups

UNIT-IV Information , its nature and role in Modern Society.

Information –Definition, characteristics and its role in changing society.
Freedom of access to information, UAP,UEC. Intellectual Property Rights- copyright, patens, censorship.

UNIT-V User Communities.

Users, their Characteristics, User Study, User education
Community Information Service Adult education, Post Literacy and Library Services, Library Extension Programs.

UNIT-VI Library Movement in India and Development.

Library Movement in India and role of Library Associations
Library Legislation in India with reference to West Bengal
Organizations involved in development of Library Information service in India- RRRLF, INSDOC, NASDOC, DESSIDOC, NISSAT etc.
Measures for Bibliographical Control in India, Press and Registration Act
Delivery of Books and Newspapers Act.

UNIT-VII Library and Information Profession.

Library and Information Profession : History, role and ethics.

PAPER-II Library and Information Centre Management.

Objectives :

1. To introduce theories and principles of library administration.
2. To consider their application in the library administration.
3. To study and understand various administrative procedures of the different library sections.

UNIT-I Library Management.

Basic Concept.
General Principles of Management and their application of Libraries .
Library Organizational Structure.

UNIT-II Library Planning.

Physical Planning of Libraries and Information Centers, library building, furniture and equipment- their standards.

UNIT-III Library Systems.

Library as a system. Sub- systems of library.
Acquisition Subsystem (Section). Types of Documents.

Collection Development- Selection Principles, Problems and Sources, routine work, Resource sharing and Networking of Libraries and information Centers.

Technical Subsystem (Section) : Routine work of circulation Section.
Charging and discharging.
Serial Subsystem (Section) : Problems of Periodical acquisition and
Solution. Routine work of Periodical Section. Records of Periodical Section.

UNIT –IV Library Committee Library Rules and Regulations.

Library Committee- types and functions. Committee Meeting. Agenda, Resolution Rules and Regulations of Libraries.

UNIT-V Personnel Management

Recruitment and training of library personnel, job-analysis, In-Service training, staff size, staff formula. Evaluation of Personnel, Evaluation standards.

UNIT-VI Office Management

Office Management : Administrative records and their importance.

UNIT-VII Library Statistics and Annual Report.

Meaning, Nature and Importance of Statistics.
Application of Statistical Methods in different activities of Libraries

PAPER-III Library Classification (Theory)

Objectives :

2 To study and understand the theory of classification.
3 To familiarize the students with the procedure involved in classification.
4 To familiarize the students with the characteristics of different schemes of classification.

UNIT-I Basic Concepts

Classification- its different meanings.
Library Classification- its nature, purpose and functions.

UNIT-II Book Classification

Knowledge Classification and Document Classification.
Features of Document Classification.

UNIT-III Subjects and their formation.

Concepts of subject: Universe of subjects- Modes of formation of subject
Subjects : Kinds- Basic, simple, compound and complex

UNIT-IV General theory of Classification.

Normative principles: Canons, Principles and Postulates.
Work of Classification in three planes.
Principles of Helpful Sequence . Principles of facet Sequence.

UNIT-V Faced Classification : Basic Concepts, Terms

Facet and Facet Analysis, Focus and Foci, Array and Chain
Fundamental categories- Round and levels
Phase relation : Levels and Types.
Systems and Specials.

UNIT-VI Notation in Classification
Notation- Need, Functions and Objectives
Types and Systems
Qualities of Good notations.

UNIT-VII Classification Schemes

Types and characteristics of Classification Schemes, Features of DDC, UDC and CC
Call Number and its parts, Broken Sequence, Relative Index.

PAPER-IV Library Catalogue (Theory)

Objectives

1. To study and understand the theory of cataloguing
2. To familiarize the students with the Procedure involved in cataloguing.
3. To introduce the catalogue codes to the students.

UNIT-I Library Catalogue.

Basic Concepts, Definition, Objectives and Functions.
Difference between Catalogue and Bibliography , Accession Register, Shelf list.

UNIT-II Forms of Catalogue

Physical Forms : Books Shelf card and Machine- readable forms- their advantages and disadvantages and suitability in different types of Libraries.
Inner Forms : Dictionary and Classified Catalogue, Advantages and disadvantages and suitability in different types of Libraries.

UNIT-III Catalogue Entries.

Parts of Document- Source of information for a Cataloguer
Entries- Format, kinds and their functions, Data elements in different kinds of entries.
Unit Card System.

UNIT-IV Catalogue Code.

Definition, Need, Components, Development of codes, Main Features of CCC and AACR.

UNIT-V Normative Principles.

ICCP 1961, canons propounded by Ranganathan.
Overview of problems of cataloguing for Non-Book Materials.

UNIT-VI Filing of Entries.

Rules for Filing Entries (Alphabetical/ Classified)

UNIT-VII Subject Cataloguing.

Concepts, Purpose, Problems and General Principles
Subject Heading Lists- Library of Congress and Sear's List.

UNIT-VIII

Centralized and Co-operative Cataloguing-with special emphasis on
Union Catalogue
Limited Catalogue

UNIT-IX Cataloguing Standards.

Cataloguing Standards_ ISBD, ISBN, ISSN
Computerized Cataloguing – MARC, UNIMARC, CCP.

UNIT-X Organization of Cataloguing Department

Organization of Cataloguing Department

PAPER-V Information Sources, Services and Systems (Theory)

Objectives :

2 To familiarize students with a broad range of information sources.
3 To develop skills in dealing with library and information sources.
4 To development students with the general and specialized library and information services.

UNIT-I Information Sources.

Definition and Importance.
Types of Information Sources : Documentary, Human and Institutional
Documentary sources : Primary , Secondary and Tertiary.
Bibliography- Subject Bibliography , National Bibliography, Trade Bibliography, Universal Bibliography.
Ready Reference Sources – Categories and Characteristics.
Evaluation of Reference Sources.
Internet as Sources of Information

UNIT-II Information Centers and Systems.

Information Centers and their functions.
Information Centers. At Different levels- International, National, Regional, Local : FID, VINITS, INSDOC, NASSDOC, DESIDOC and SENDOC.
Information Systems – Meaning and Importance: NISSAT and UNISIST.

UNIT-III Information Services.

Definition, Need of Reference, Documentation and Information Services.
Organization of information (documentation work) and Information service (Documentation service)
Information queries and Search Strategy - Communication with users (Reference Interview)
Information service to Generalists : User orientation, Short-range Information Service and long –range Reference service.
Information service to Specialists : CAS, SDI, Indexing and Abstracting, Documentation list
Supplementary Services : Translation Services, Document Supply Service (Reprography Service).

PAPER-VI Computer Basics and application in Library and information services.

Objectives :

2. To familiarize students with the use of computer technology and its application in libraries.
3. To enable students to use one commercial word processing package.
4. To understand the elements of programming using most simply possible language.

UNIT-I Introduction to Computers.

Computer and its units.
Computer and its classification. Computer generations
Software concepts
Operating system- DOS

UNIT-II Automation of Libraries.

Library Automation overview
Need of Computer Applications
Areas of Computer Applications : In-house
Computerized Network.

UNIT-III On-line and CD ROM Services.

General overview of on-line database services and CD ROM.

UNIT-IV Application Software.

General- purpose application software word processing.
Special purpose application software : CDSISIS.

HOMOEOPATHIC MEDICINE AND SURGERY.

(a) Anatomy.
(b) Physiology including Biochemistry.
(c) Homoeopathic Pharmacy.
(d) Organon of Medicine, Principles of Homoeopathic Philosophy, History of Medicine and Chronic diseases & Psychology.
(e) Preventive and Social Medicine including Family Welfare and Health Education.
(f) Forensic Medicine & Toxiclogy.
(g) Pathology Bacteriology & Parasitology.
(h) Practice of Medicine and Pediatrics.
(i) Surgery including ENT and Ophthalmology.
(j) Obstetrics & Gynecology.
(k) Homoeopathic Materia Medica & Homoeopathic Therapeutics.
(l) Case taking and Repartorisation.

MASS COMMUNICATION & JOURNALISM.

Paper-I (a) Mass Communication- History & Concepts.

Communication- Definition and Functions- types of Communication- Interpersonal- Interpersonal-Group- Mass Communication- Characteristics- Means of Communication- Press-Radio-Television-Film –Internet- Multimedia-DVD-Smart-Radio-Cable Channel.

(b) Media Laws and Ethics.

Freedom of Information- Right to Information-Freedom of the Press with special reference to India-Press Commissions-Press Councils-Media Council-Important Press Laws- Defamation-Contempt of Court-Sedition- Official Secrets Act- Press and Registration of Books Act – Parliamentary Proceedings (Protection of Publication) Act- Copyright Act-Drugs and magic Remedies (Objectionable) Advertisements Act. Ombudsman- codes of ethics-NWIO.

Paper-II (a) Print Journalism : History.

International Development of Press-The Origin of Print Media in India and abroad- James Augustus Hickey- James Silk Buckinghm- Baptist Church Missionaries of Serampore- Raja Rammohun Roy-Young Bengal- Charles Metcalfe- Sambad Prabhakar- Iswar Chandra Gupta- Keshab Chandra Sen- Hindu Patriot and Harish Chandra Mukherjee-Amrita Bazar Patrika-Jungantar-Verncular Press Act-Surendra Nath Banerjee- Sandhya- Tattobadhini- Bengal Spectator- Samprakash-The Statesman –The Hindu- Ananda Bazar Patrika- Swadhinata- Mahatma Gandhi as a Journalist- Tilak as a Journalist- Gokhale-Jawaharlal Nehru- Subhas Chandra Bose as a Journalist- Development of India News Agencies- Other Newspapers-The Stalwarts of the 19th and 20th Centuries.

(b) Radio

History of Radio- History of Broadcasting in India- Radio News- Functions of Radio News Room- News Editor- Producer- Role of Radio Reporter- Radio Interview- Concept & Techniques of Radio Editing- Monitoring- Radio News reels- Effects of Government - Public Opinion-Employee Groups and Ownership- Production of Radio- News Specials- Radio Talk- Radio Feature – Radio & Newspaper : Comparative Discussion-F.M. Radio- And pence Research.

PAPER-III (a) Mass Communication Theories.

Theories of communication- Communication Models- Aristotle- Lesswell- Shannon and Weaver- Wilfur- Schramm other Models Mass Media and National Development- Critical analysis of Dominant Paradigm- Mass Media in India- International Communication- Imbalances in News flow- Effects of Globalization on media systems and their functions- Mass communication, society and culture.

(b) Public relations media management.

Public Relations- Definition- Its origin- Aims and Objectives- Publics in Public Relation and Publicity- Public Relations and Propaganda-Tools of Public Relations- Press Release, Press Conference-P.R.O. –House Journal- Public Relations Campaign- P.R. in India- Public Sector and Private Sector- P.R. Counselling- P.R. and Advertising- Company Periodicals- How it evolved –its Primary role- Types of Periodicals- Qualification of its editor- News gathering Network- Publics in Public Relations- Financial P.R. – Investors Relations- Crisis management- crisis planning- response to media-Ethic and Code of conduct- International Public Relations Association- Public Relation Society of India- PIB DAVP NFDC.

Definition and different type of Media management- Ownership pattern of newspaper in India- Private Control- Public Control- Autonomous Model- Prasar Bharati- Cable TV Regulation Act- Government Media Organization- Organizational set up of All India Radio, Doordarshan and other private channels.

PAPER-IV (a) Reporting, Editing and Photo Journalism

Reporting : Types of reporting, investigative, interpretative, in depth reporting, types of reporters and correspondents.

Specialized areas in reporting : Magazine Reporting, Financial reporting, Sports Reporting etc.

Function of Chief Reporter, Special correspondent. Qualities of a reporter.

Photojournalism : Meaning and significance of photojournalism- History of photojournalism- Parts of a camera – types of news cameras- recent trends in photojournalism.

Art of Interview . Agency Reporting, Political Reporting - Recent Trends

Principles of Editing : Computerized Editing , copy testing, marriage of stories, story within a story, editing soft wares.

Various categories of Editors : Editors, News Editors, Chief Sub Editors, Sub Editors-Their functions and duties, qualities of a good editor, copy writers.

Headlines: Types of headlines and their usage and impact.

Page Designing : Page planning, computerized page layout and designing.

Editing terminologies : data line, Print Line , Ear Panels, Edit Page Op-Ed page, Souls etc.

Photo Editing : Basic principles. Photo editing using computer soft wares (Photo Shop, Photo editor etc.) Types faces and fonts and their usage.

Magazine editing, recent trends in editing.

Principles of journalistic writing, ethics and press codes. News, Elements of News. Principles of news writing- Different styles of news writing- Inverted pyramid style.

Feature writing- Types of features, Difference between news and features.
Columns and column writing. Writing for magazines.]
Yellow Journalism, its origin, recent trends.

Specialized areas in Prints Journalism : Financial Journalism, Science writing, gender and environment Journalism, rural reporting.

Reviews writing : Reviewing Films, Drama, Music etc.

PAPER- V (a) National Affairs.

Indian constitution- Preambles- Fundamental Rights and Duties- Power and Position of President- Powers & Position of Prime Minister- Supreme Court- Parliament- Rajya Sabha and Lok Sabha- Speaker- Privileges of the Members- Cabinet- Position and Power of Governor- State Legislatures- Chief Minister- High Court-Local Self Government- Major Political Parties in India Election Commission- Planning Commission- Five Year Plans- Current Economic Policy- Current Industrial Policy- Current Foreign Policy.

(b) International Affairs.

United Nations- Objectives of the UN- Success & Failure of the UN- Different Organizations of the UN- Diplomacy- Cold War- Survey of International Affairs-Decline of Socialism in USSR & East Europe- Unipolar World- Foreign Policies of USA, Russia, China, Britain, France and India in Current Perspective- Regional Groupings- ASEAN-SAAR-EEC-NIICO- & News Pool-NAM- Neighboring Countries and India – Role of International News Agencies in Developing Countries- Changing Economic & Political scenario of developing countries.

PAPER-VI (a) Advertising.

Advertising- definition, historical development : Social and economic benefits of advertising- criticism, types of advertising : Consumer- Corporate- industrial- retails- national- trade- professional- social- product advertising- target audience- brand image positioning; advertising strategies, appeals, advertising spiral, market and its segmentation sales promotion.

Creative strategy- purchase proposition- creative executive- Copywriting and production techniques, print, radio, television, film, outdoor- Use of Computer in copy preparation- reach in advertising. Advertising Agency- structure and functions-media related decisions strategy and planning budget- Newspaper, magazines, radio , television, outdoor-other promotional media; Advertising and ethics- advertising and law- advertising and children and Women- emerging trends and issues; Structured functions of an agency.

PAPER-VII (a) Development Communication.

Meaning and Origin of Development Communication- Role of Communication in development. Early years of Dev. Com. In India. Role of Rogers and Wilbur Schramm in Indian Development.

Dev. Com. Theories _ Learner, Rogers, Schramm, Dependency models (Marxist and non Marxist). Alternative paradigms- culturist mode, Gandhian model Self Reliance.

Mass media for development- Radio and TV development programmes- Agriculture, Health, Education, Nation building and the role of the press. Dev. Com. Research methodologies.

(b) Broadcast Journalism & Television.

Broadcast Journalism : Meaning ; Nature of broadcast news; prerecorded presentation and live coverage; designing a news capsule; compiling a news bulletin; balanced presentation & selection of topics.

History of Television in India- Organizational Structure –TV Newsroom- News Editor Producers- Television Writing Techniques- Effects of Television on Society – Cable Television- Satellite Channels- Its effect on society- Fiction & Non- Fiction Television Programmes- Electronic Magazines and news series- Interviewing- Pre-production- Problems of Balance Presentation and Selection of Topics- Viewer ship survey & ratings.

Detailed Syllabus for Physiotherapy

NEUROMUSCULAR PHYSIOLOGY (Details)

1. **Nerve & Muscle** – Structure and function of muscle and nerve cells, classification of muscle and nerve fibers. Cell membranes, ionic and potential gradients and transport action potential and its propagation evoked potential, factors affecting muscle tension, neuromuscular transmission motor units, synapse, reflex physiology degeneration and regeneration of the nerve fiber, reaction of degeneration muscle contraction mechanics, chemistry and biophysics.

2. **CNS (Details)**

(a) Physiology of synapse.
(b) Physiology of receptors organs for general special sensation.
(c) Physiology of touch, pain and temperature sensations.
(d) Physiology of reflex action. Classification and properties of reflexes excluding conditioned reflexes)
(e) Sensory and motor tracts of spinal cord and effects of complete & incomplete trans-section of spinal cord at various levels.
(f) Cerebellum and basal ganglia.
(g) Sensory and motor cortex.
(h) Physiology of labyrinthine.
(i) Regulation of equilibrium and posture.
(j) Learning , memory.

BLOOD

(a) Composition and functions of blood.

RESPIRATORY SYSTEM (Details)

(a) Introduction , general organization.
(b) Mechanics of respiration.
(c) Pulmonary volumes and capacities.
(d) Transport of respiratory gases.
(e) Nervous and chemical, control of respiration.
(f) Pulmonary function tests.

CARDIOVASCULAR SYSTEM (Details)

(a) Structure and properties of cardiac muscle.
(b) Cardiac cycle.
(c) Regulation of heart rate.
(d) Cardiac Output.
(e) Blood Pressure its regulation.
(f) Regional circulation- coronary, skin, muscle, cerebral circulation.
(g) Cardio respiratory changes during exercise and cardiac performance during exercise.
(h) Normal ECG.

BIOCHEMISTRY

I. NUTRITION.

(a) Basal metabolic rate- definition, normal values factors affecting B.M.R.
(b) Protein- energy malnutrition, kwashiorkor and marasmus.

II. CARBOHYDRATES.

(a) Glycolysis- aerobic, anaerobic, energetics regulation Cori's cycle.
(b) Citric acid cycle and its energetics.
(c) Glycogenesis, glycogenolysis and their regulation, role of liver and muscle glycogen.

III PROTEINS.

(a) Definitions of protein and amino acids, functions of proteins.

(b) Functions of DNA, codons and sequence of amino acids, proteins.

IV VITAMINS

Definition, classification according to solubility, Individual vitamins- sources, coenzyme, forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity.

V. ACID-BASE BALANCE, WATER AND ELECTROLYTES.

(a) Body water, osmolarity. Extra and intra-cellular sodium and potassium, buffers, pH. Buffers system in blood.

(b) Role of lungs and kidneys in acid-base balance.

EXERCISE THEPARY-I

Sl. No.	Topic
1	Mechanics of Force :
(a)	Levers - types, advantages & disadvantages.
2	Suspension :
(a)	Types of Suspension
3	Relaxation :
(a)	Principles
4	Passive Movements :
(a)	Manual mobilization and manipulation
5	Evaluation of Mobility (ROM) /Goniometry :
(b)	Principles
6	Hydrotherapy :
(a)	Merits & Demerits.
7	Group Exercises & Recreational Exercises :
(a)	Importance

EXERCISE THEPARY-II

Sl.No.	Topic
1	Mobilization : Definition, Indication, Cause of limitation and its prevention.
2	Stretching : Definition, Types.
3	Traction : Types.
4	Walking Aid: Types, Advantages/ Disadvantages, Indications.Method of using Measurement.
5	Proprioceptive Neuromuscular Reeducation (PNF) : Definition, Principles, Technique.
6	Postural Drainage : Principle, Merits, Demerits.
7	Breathing Exercise : Principles.

ELECTROTHERAPY-II

Sl.No.	Topic
PART A : LOW FREQUENCY THERAPEUTIC CURRENTS	
1	Low Frequency Currents :Trans- Cutaneous Electrical Nerve Stimulation (TENS).
PART B : MEDIUM FREQUENCY CURRENTS	
1	Interferential Currents :Indications& contraindications, merits & demerits.
PART C : THERMO & ACTIONOTHERAPEUTICS	
1	Therapeutic Heat & Cold :Conductive Heating - Dry Heat, Moist Heat, Paraffin Wax Bath.Convective Heating – Fluidotherapy, Contrast Bath.Radiative Heating – IRR, UVR, LASERCryotherapy : Types & application
2	High Frequency Currents:Types, Principles, Production.

BIOMECHANICS & KINESIOLOGY

A. VERTEBRAL COLUMN

1. Articulations, Ligaments and Muscles, typical vertebra, intervertebral disc.

B. THE SHOULDER COMPLEX

1. Describe the structural components of the shoulder complex including the articulating surface, capsular attachments and movements of the following joints.
   (a) Sternoclavicular
   (b) Acromioclavicular
   (c) Scapulathoracis
   (d) Glenohumeral

2. Describe the muscles of elevation (Deltoid), Supraspinatus, Infraspinatus, Teres minor, Subscapularis Upper Trapazius, Lower Trapazius, Serratus anterior, Middle Trapazius & Rhombodies)

PHARMACOLOGY

Definition, action, indication, contraindication, adverse reaction of the following :

(a) Antihypertensives.
(b) Drugs action on C.N.S and cardio respiratory function which influence the physical exercise.
(c) Chemotherapeutic drugs used in – Leprosy, tuberculosis, drugs acting on peripheral nervous system, stimulating and inhabiting cholinergic and adrenergic endings.

MICROBIOLOGY

A. Outline of common pa pathogenic bacterial and diseases produced by them
(a) Meningitis.

PATHOLOGY
1. Immuno- deficiency- AIDS

ORTHOPAEDICS
Traumatology
1. Classification of fractures. Fractures healing. Principles of fracture management.
2. Complication of fracture & their management.
3. Fractures of the pelvis. Dislocation of the hip, Dislocation of shoulder & elbow..
4. Fracture spine-paraplegia.

COLD ORTHOPAEDICS.
5. Congenital anomalies : CTEV, DDH.

RHEUMATOLOGY

1. Sjogren's syndrome
2. Calcium Metabolism , Tetany / Osteomalacia / Osteoporosis.

PEDIATRICS CONDITION

1. Obstetrics Brachial Plexus injuries and PNI.
2. Cardio-respiratory Rehabilitation in Children.

GYNECOLOGICAL AND OBSTETRICAL CONDITIONS.

1. Menopause, its effects on emotions and musculoskeletal system.
2. Musculo skeletal disorders during pregnancy.
3. Prenatal complications- investigations- management.
4. Urogenital dysfunction, pre-post natal conditions.
5. Methods of birth control- merits/demerits

NEUROLOGICAL CONDITIONS NEUROMEDICINE

Sl.No.	Topic
1	Introduction to Neuroanatomy, Blood supply to brain , spinal cord, circle of Willis: ·
	Lobes & function·
	Cranial Nerves & functions·
	Peripheral Nerve & Plexus·
	Dermatomes
2	Infection of Nerve System :·
	Meningitis·
	Poliomyelitis·
	Viral Encephalitis·
	Rabies
3	Cord Lesions :·
	Transverse myelitis·
	Tabes Dorsalis·
	Syringomyelia·
	Vit B12 deficiency (combined subacute degenerate)·
	Myelopathies (Compressive & Non Compressive)
4	Extra pyramidal Syndromes:·
	Basal Ganglia Neurophysiology·
	Akinetic Rigid Syndromes·
	Parkinson's Syndrome·
	Multi System atrophy·
	Wilson's Disease·
	Dyskinesias
5	Multiple Sclerosis
6	Myasthenia Gravis
7	MND
8	Brachial plexus & Peripheral Nerve Injuries
9	Diseases of the Muscle :·
	Muscular Dystrophies ·
	Myopathies

NEUROSURGERY

1. Hydrocephalous :

   a. Physiology and circulations of CSF.
   b. Etiology of Hydrocephalous.
   c. Clinical Features/Management of Hydrocephalous.]

2. Epilepsy :

3. Management of Bed Sores.

4. Operative Surgery of Spine

COMMUNITY MEDICINE & SOCIOLOGY

PREVENTIVE SOCIAL MEDICINE & COMMUNITY REHABILITATION.

1. Rehabilitation – A team approach role of O.T., Audio logy and speech therapy; medical social worker; psychologist; vocational guide; prosthesis and Orthotics.

PHYSIOTHERAPY IN NEUROSCIENCE.

Sl.No.	Topic
1	Extra Pyramidal Syndromes : Neurophysiology of Basal GangliaParkinson's diseaseWilson's diseaseChorea-Sydenhams, HuntingtonMultisystem AtrophyDystonia Musculorum Deformans, Hallervorden Spatz Disease etc.Definition, Etiopathogenesis, Clinical Features and Prognosis; Aims,Principles and PT Management.
2	Polyneuropathy : Alcoholic, Diabetic, Metabolize, Toxic, Inflammatory (Emphasis on GBS)and Infective neuropath(Hansens) Types, etiopathogenesis clinical features; Management- Aims, Principles and PT Management
3	Muscular Dystrophy : DMD, Beckers, facio-scapulo-humeral Muscular Dystrophy and PeronealMuscular DystrophyTypes, Etiopathogenesis Clinical features ; Management- Aims, Principles and PT Management
4	Peripheral Nerve Injuries : Causes, Clinical Features, Complications and Management-Aims, Principles and PT Management

PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS.

Sl.No.	Topic
1	Fractures (in general) Definitions, Fracture Healing, Classifications, Clinical Features, Diagnosis
(a)	Principles of Management- Reduction-Open/ Closed : Immobilization- Sling, Brace, Splint, Slab, Cast and Traction (Types) , External Fixation, Internal Fixation, Functional cast bracing ; Rehabilitation/ Physiotherapy Management (including C.P.M.)
(b)	Complications- early and late, their Orthopedic and Physiotherapy Management (Emphasis on Shock, Compartmental syndrome / Volkman's Ischaemic Contracture (VIC), Fat Embolism, Mal-union, Reflex Sympathetic Dystrophy (RSD), Myositis Ossification, Avascular Necrosis, Fracture disease, Pressure sore.

2 Fractures of the Upper Limb :

(a) Fractures of Clavicle, Scapula
(b) Fractures of Around the shoulder (Neck of Humerus, Head)
(c) Fractures of Shaft of Humerus
(d) Supra Condylar fractures
(e) Around the elbow (Condylar, Olecranon, Captiulum, Coronoid)
(f) Fractures of Forearm (Monteggia, Galaezzi fracture- dislocation)
(g) Fracture of Ulna and Radius
(h) Fracture of Wrist and Hand

3 Fractures of the Lower Limb :

(a) Fracture of Pelvis
(b) Fracture of Neck of femur, Trochanter & Sub-trochanter(
(c) Fracture of Shaft of femur
(d) Fracture around the Knee (Patella, Supracondylar fracture; Condylar fracture f Femur and Tibia
(e) Fracture of Shaft of Tibia and fibula
(f) Fracture of around the Ankle (Pott's fracture, Malleolar fracture)
(g) Fracture of Foot (Talus, Calcaneum, Metatarsus)

4 Fractures of the spine : (Includes Fracture of Atlas, Odontoid etc.)

5 Dislocation :

Definition, Classification, Clinical Features, Diagnosis, Orthopedic & Physiotherapy Management, Complications & their Management(Emphasis on Dislocation of Shoulder, Elbow, Hip, Knee & Patella

6 Soft Tissue Injuries :

Classification ; Meniscal Injuries, Sprains, Strains, Capsulitis, Tendinitis, Tenosynovitis, Bursitis, Fat Pad Inflammation, Fasciitis, Cartilage lesions.Meniscal injuries of Knee

(a) Sprains : Knee-Trbial/ Fibullar Collateral, Cruciate
(b) Ankle- Lateral Collateral, Deltoid;
(c) Thumb MCP joint- Ulnar Collateral
(d) Strains : Tennis Elbow, Golfers Elbow, Rupture of Biceps-brachii, Quadriceps, Tendo Achillis
(e) Adhessive Capsulits / Periarthritis of Shoulder
(f) Tensynovitis/ Tendinitis- Supraspinatus, Biceps Brachii, Dequervains Disease, Peroneal tenosynovitis, Intersection syndrome, Ilio-tibial Band syndrome, Trigger Finger
(g) Bursitis : Supra, Infra (Superficial & Deep) Patellar, Popletial (Baker's Cyst), Subacromial
(h) Fat Pad Inflammation of Knee (Hoffa's Syndrome)
(i) Fascitiis- Plantar fasciitis, Dupytren's Condtracture
(j) cartilage Lesions- Chondromalcia pateela, Osteochondritis
(k) Metatarasalgia

7 Hand :
   (a) Crush Injuries
   (b) Flexor & Extensor Tendon Injury
   (c) Arthritic , Paralytic, Burn Hand

8 Traumatic Spinal Cord Injuries - Quadriplegic & ParaplegiaClinical Presentation, Complications, Medical and Surgical ManagementPhysiotherapeutic Management

9 Arthritis : (Includes Secondary Deformities and Management)
   (a) Synovitis
   (b)Osteo Arthritis (Primary/Secondary OA)
   (c) Rheumatoid Arthritis (RA)
   (d) Sero-ve Arthritis- Ankylosing Spondilitis, Psoriatic arthritis
   (e) Gout/Pseudo Gout
   (f) Haemophilic, Neuropathic arthritis (Charcot's Joint)

10 Back pain and Cervical Pain :
Classification, Causes, Patho-physiology, Clinical Features, Investigations, Management:
   (a) Prolapsed Intervertebral Disc (PID), Spinal Canal stenosis (SCS), Spondylosis, Spondylosis / Spondylolysthesis, Lumbo- Sacral Sprain, Sacro-Iliac sprain, Sacralisation, Lumbarisation, Coccydynia.
   (b) Mechanical back pain / Postural Backache-Pregnancy, Obesity, Limb length discrepancy.

11 Orthopedics & PT Management in
   (a) Hansen's Disease
   (b) Poliomyelitis
   (c) Multiple Congenital Contracture (MCC)
   (d) Spinal Dysraphism/ Spina Bifida

12 Congenital Anomalies :Club Foot, Club Hand & other Hand Anomalies, DDH & Congenital Dislocation of Patella

13 Cerebral Palsy : Definition, Etiology, Classification, Clinical features, Complications & management-Medical & Surgical, (Multidisciplinary approach)Physical Therapy Management-Aims, Principles, Management

14 Peripheral Nerve injuries :
   (a) Traumatic : Median, Radial, Ulnar, Axillary, Musculocutaneous, Sciatic, femoral, Common personnel, Obturator
   (b) Entrapment : Carpal Tunnel, Cubital Tunnel, Trasal Tunnel, Supinator Pronator teres Syndromes ; Meralgia paresthetica
   (c) Brachial Plexus- Obstetric palsy

15 Perthe's disease, Slipped Femoral Capital Epiphysis & AVN (Avascular Necrosis)

16 Orthopedic Surgeries :
   (a) Arthroplastry : Excision, Replacement (partial, total) of Hip, Knee & others .
   (b) Arthrodesis: Hip, Knee, Triple arthrodesis etc.
   (c) Osteotomy

17 Amputations : Definition, Types, Levels, Indications, Complications, Ideal stump, Management- Pre & Post-OperativePhysiotherapy Management- Pre & Post-Operative(includes Stump management, Prosthetic prescription & training)

18 Orthotics & Prosthetics :Biomechanical principles, construction, prescription & fitting / training and careExtremity & Spinal orthosis (splints, braces, calipers etc)

PHYSIOTHERAPY IN GENERAL CONDITIONS

Sl.No.	Topic
1	Bronchial Hygiene Therapy : Nebulisation & Humidification, Mucolytics, Postural drainage, Coughing & Huffing.
2	Lung Expansion Therapy : Relaxation, Breathing exercise, Incentive Spirometry, IPPB
3	Physiotherapy in Obstructive diseases
4	Physiotherapy management in Restrictive diseases
5	Physiotherapy management in Pulmonary surgeries
6	Physiotherapy management in Respiratory failure
7	Physiotherapy management in ARDS
8	Respiratory home care
9	Pulmonary Rehabilitation- Adults & Pediatric
10	Physiotherapy management in Cardiac Conditions
11	Physiotherapy management in Cardiac Surgeries
12	Cardiac rehabilitation- Adults & Pediatrics
13	Physiotherapy management in Abdominal surgeries
14	Intensive Care MonitoringIntensive Care ManagementArtificial Ventilators- Adult, Pediatric & Neonatal ; Parameter setting & weaningOxygen Therapy
15	Head injury & intensive care management
16	Physiotherapy in Peripheral Vascular Diseases
17	Burns- (Causes, Types, Evaluation, Clinical features, Complications, Management) Physiotherapy management in conservatively & surgically (excision , grafts , contracture releases, re-constructions) managed acute, sub- acute & chronic conditions
18	Management of wounds (acute/chronic, non-healing) and Hypergranulated scars.
19	Physiotherapy management in Medical, Radiation & Surgical Oncology with emphasis on head & neck cancer, gynecological conditions.

REHABILITATION

Sl.No.	Topic
	PART A : COMMUNITY BASED REHABILITATION (CBR)
1	Community Rehabilitation : Aims, Principles & Scope, Present Structure, Guidelines for formation of CBR program
2	Multidisciplinary approach : Role & limitation of Physiotherapist, Occupational Therapist, Speech & Audiologist, Psychologist, Social worker, Dietician, Nurse & Physician
3	Agencies involved in CBR for physically handicapped
4	Legislation for physically handicapped
5	Role of family members in rehabilitation of physically handicapped
6	Concept of multipurpose health worker
	PART B : GERIATRICS
1	Physiotherapy of aging process at cellular & systemic level
2	Physiological changes & adaptations to exercise in aged
3	Psycho-socio-economic implications in Aging
4	Role of Physiotherapy in Graceful Aging-evaluation & management
5	Concept of institution for the aged

PART C : INDUSTRIAL HEALTH & ERGONOMICS

1 Occupational hazards, factors responsible
2 Accidents/ Pollution : Air, Noise, Vibration, Chemical, Thermal, Radiation
3 Preventive & Restorative management of(a)
Occupational Hazards in execitives' Stress & Sedentary lifestyle
(b) Office Staff (Neck & Back Care in sedentary lifestyle
(c) Technical & labour Staff 9 Back Care, Care of weight bearing points, Care of occupational & Respiratory problems)
4 Ergonomic Evaluation- Evaluation of working areas, Type of work
5 Disability evaluation
6 Sports & Industry
7 Work management

PART D : SPORTS INJURIES

1 General guidelines for Sports Rehabilitation
2 Role of Physiotherapist in Sports
3 Nutrition in sports
4 Environmental effect on sports performance specific to thermal influence
5 Ergogenic aids
6 Sports in special groups- female, children, adolescent & aged
7 Fitness testing for individual sport events
8 Common Soft tissue & Skeletal injuries associated with specific Sports

PART E : WOMEN'S & CHILD HEALTH

1 Physiotherapy purperium & post-natal stage

PART F : HEALTH PROMOTION

1 Physiotherapy Management in Hypertension, Diabetes, Obesity.

EXERCISE PHYSIOLOGY

Sl.No.	Topic
1	Strength , power, endurance, speed, flexibility, agility, skill, aerobic & anaerobic activity
2	Acute effects of exercise on _ Cardiovascular, Respiratory, Metabolic (aerobic & anaerobic), Thermoregulatory, Buffer (pH) , Neuro-muscular-skeletal, Endocrine, Immune systems
3	Conditioning, effects (adaptations) of exercise on – Cardiovascular, Respiratory, Metabolic (aerobic & anaerobic) , Thermo- regulatory, Buffer (Ph), Neuro-muscular-skeletal (strength, power, endurance, speed, flexibility, agility, skill) , Endocrine, Immune systems, Body composition
4	Measurement of aerobic & anaerobic power and other adaptations(Exercise tolerance test- types – walks test, step test, bicycle ergometry, treadmill test etc; basic parameters; pre/post/ during-exercise studies)
5	Training – aerobic & anaerobic(strength, power, endurance, speed, flexibility , agility, skill)
6	Exercise at medium & high altitude; sport diving; Space/Microgravity
7	Effects of prolonged Bed Rest / Immobilization
8	Special aid to performance/ Ergogenic aids

SOCIAL WORK

1. English (Functional)
2. History and Philosophy of Social Work-I
3. Sociology and Social Anthropology
4. Human Behaviour and Social Environment-I
5. Social Work Intervention-I (Working with Individuals and Families)
6. Agriculture , Dairy farm and Crafts (Theory and Practical)
7. English (Alternative)
8. History and Philosophy of Social Work-II
9. Human Behaviour and Social Environment-II
10. Economics
11. Social Work Intervention-II (Working with Groups)
12. Social Work Intervention-III (Working with Communities)
13. Fields of Practice-I (Welfare of Different Groups with special needs and Social work Practice)
14. Human Behaviour and Social Environment-II
15. Social Work Intervention- IV (Administration of Social Welfare Organizations)
16. Economic Policies and Social Welfare
17. Panchayat Raj and Urban Local Self Government
18. Fields of Practice-II (Welfare of the Disadvantaged Groups)

BACHELOR OF COMPUTER APPLICATION (BCA)

1. Computer Organization & Architecture

Basic Structure of Computers- Addressing Methods-Program Sequencing-The Processing Units-CPU-Bus-Input Output Organization-Main Memory –Evolution of Computers-Processor Design-Micro Programmed Control-Memory Organization.

2. Fundamental of Digital Electronics

Boolean Algebra-Arithmetic Circuits-Flip-Registers & Counters-Memory Devices.

3. Web Page Design

Webpage-HTML-Site Design & Navigation- Dynamic HTML-java Script-ASPs

4. Computer Programming in C

Computer Programming Fundamentals- 'C' Fundamentals- Operators & Expression- Input & Output-Flow of Control-Program Structures- Array & Pointers.

5. Programming

GUI using Visual Basic- Java Programming- Object oriented Programming using C++- Classes and Objects-Object Initialization and clean up- Dynamic Objects- Operator Overloading – Inheritance – Virtual Functions – Stream Computation- Exception handling.

6. Mathematics

Ordinary Differential Equations- General Linear Differential Equations – Laplace transformation- Fourier series & transformations.

7. E-Commerce

Introduction- Business Strategy-B2B electronic Commerce-intranet-Extranet-Electronic Payment system-Infrastructure for Electronic Commerce-Economic, Global and other issues in Electronic Commerce.

8. Data Structures

Introductions – Linear Data Structure- Trees –Graphs-Sorting & Searching –Files.

9. Database Management System

Introduction- Data System Concepts- Physical Data Organization Network Model-Relational Model – Relation Query language- Design Theory for Relation Database-Database Protection-Distributed Database System- RDBMS

10. Computer Networking

Introduction-Network Layers-OSI Model, Four Classes of Addresses- Internet Protocols- Routers- Switches- WiFi- WiMax-Bluetooth-DSI-ISDN-VSATs.

11. Computer Security & Digital Signatures

Introduction-Computer Security Fundaments-Network Security & Threats- Viruses- Worms-Phising-Pharming-Hacking-Public & Private Keys-PKI-Firewalls-Anti Virus- Prevention of Cyber Crime-Digital Signature.

12. Information Technology Act- 2001

SYLLABUS SUBJECT : BHUTIA

Prescribed Books		Author, Editor & Publisher
1.	Poetry (Tsigcheth)	D.R. Lama
2.	Short Story (Sungtam)	Tashi Bhutia
3.	Prose (Tsighlhung)	
(a)	Tsenrig dang Rigzung	P.R. Lama
(b)	Lossong	Baichung Tsichudarpa
(c)	Nangpoi Dhuechen	P.R. Lama
4.	Novel (Namthar)	
(a)	Richhe	Baichung Tsichudarpa
5.	Natak (Thrabten)	
(a)	Namtok	Baichung Tsichudarpa
6.	Grammer (Sumtak)	
(a)	Parts of Speech	
(b)	Person	
(c)	Case	
7.	Composition (Dritsom)	
(a)	Essay Writing	
(b)	Letter Writing	
(c)	Translation	

(Published by Text Book unit, HRDD, Govt. of Sikkim)

SYLLABUS FOR LEPCHA (GRADUATE LEVEL)

1.	Lepcha Grammer -	D.C. Lucksom
(a)	Chapter 1 to 19)	
(b)	Figurative Language	
(c)	Expletives	
(d)	Phrases and Idioms	
(e)	Honorific Language	

Composition

(a)	Precis Writing
(b)	Essay writing
(c)	Reporting
(d)	Letter Writing
(e)	Translation from Lepcha into English/Nepali & Vice-versa.

2. Tshuzong (Novel)- Goutam Lepcha
3. Adonsa Aamik Kaat (Play)- O.T. Lepcha
4. Lhaptso Kaung (Short Stories)- U. Shipmu
   Lesson to be studied :-
   (i) Aanom Timbusa Nyimtetnam
   (ii) Dungit Samthik
   (iii) Tendong Faatsa Lukaalchong
   (iv) Lukal
5. Millennium Punol (Poetry)- D. Tongden
   Lesson to be studied :-
   (i) Tado Saum Nongka Kayu Octopus Jyuam.
   (ii) Muronun Muroryem Thyak Mathon tho.
   (iii) Rongmit Pundiryem
   (iv) Tokshet Manyin Muro Arey.
   (v) Thyakpay Manibu Chukdongjong Kasusa Muro.

MODERN INDIAN LANGUAGES LEPCHA

A- POETRY

1. Ring-Dok (Poetry) RMRK

2. Chhukdong Punol (Poetry) Poems by Dorjee Wangdhi Lepcha, Dichen Tongden Lepcha and Dawa Namthonmoo.

B- FICTION

1. Ringmom Sungjut : RMRK (Short Stories)

A- Drama

1. Sosong Aal Kaat : Collection of Short Plays (U. Shipmoo)

A- Grammar and Composition

1. GRAMMAR (a) Parts of Speech (b) Grammatical categories, Persons, Number, Case.

2. COMPOSITION (a) Precis writing, Amplification, (b) Interviews, Speech Writing, Nepali/English and Vice-versa.

SYLLABUS SUBJECT : LIMBOO

A. POETRY

Prescribed Books	Author/Editor
1. Sammila Itchchee	B.B. Muringla Nugo
2. Pokkee	Bal Muringla

B. SHORT STORY

Prescribed Books

1.	Chirakle Mi	B.B. Muringla
2.	Kharmakpungmo Khe Kedaben	Harka Khamdak

C. NOVEL

Prescribed Books

1.	Thathama	P.S. Subba (Apatan)

D. PHILOSOPHY (MUNDHUM)

Prescribed Book

1.	Chaeet Mundhum (Sristi ko Vernan)	Bairagi Kainla
2.	Yakthungle Phungsok Timma Mundhum	J.R. Subba

E. GRAMMAR

Prescribed Book

1. Yakthung Huppan Nu Itchap
   Published by HRDD, Govt. of Sikkim

F. COMPOSITION

1. Essay Writing (Sum Itchap) S.R. Khajum
2. Precis Writing, Amplification
3. Interview, Speech Writing , Advertisement, Letter Writing, Short Script Writing.
4. Translation.

Course Outline of B. SC. Nursing Programme, SMIMS, Sikkim Manipal University of Health, Medical &Technological Sciences

I. Nursing Foundations

- Code of ethics & professional conduct for nurses
- Effective communication & therapeutic relationship between nurse & patient
- Nursing process
- Meeting basic & special needs of patient in health & illness
- Infection control in clinical settings
- First aid nursing in common emergencies
- Documentation & reporting

II. Medical-Surgical Nursing with therapeutic nutrition

- Concepts of comprehensive nursing care in medical surgical conditions based on nursing process
- Nursing management of patient with respiratory problems-Asthma, Bronchitis, Emphysema, Chronic Obstructive Pulmonary Diseases(COPD), Pleurisy, Pneumonia, TB
- Nursing management of patient with disorder of digestive system- Worm infestation, peptic ulcer, intestinal obstruction, cholecystitis, pancreatitis, hepatitis, cirrhosis of liver, malabsorption syndrome, hernias, haemorrhoides
- Nursing management of patient with blood & cardio-vascular problems-Hypertension, coronary artery diseases, rheumatic heart diseases, heart block, congestive cardiac failure, cardio pulmonary resuscitation, anaemia, leukaemia

- Nursing management of patient with genito-urinary problems- Nephritis, nephrotic syndrome, renal calculus, renal failure, urinary infections, infertility & sterility
- Nursing management of patient with disorders of endocrine system-Diabetes mellitus & insipidus,hyper & hypothyroidism
- Nursing management of patient with musculoskeletal problems- Fracture, arthritis, prolapsed inter vertebral disc, amputation , prosthesis
- Nursing management of patient with immunological problems- HIV,AIDS
- Nursing management of patient with neurological disorders-meningitis, encephalitis, poliomyelitis, head injury, CVA
- Nursing management of patient with disorders of ear ,nose ,throat, eye, skin – Otitis media, foreign body, epistaxis, tonsillitis, cataract, conjunctivitis, scabies, leukoderma
- Operation theatre nursing
- Introduction to diet therapy & therapeutic diet

III. Community Health Nursing

- Determinants of health
- Epidemiology
- Epidemiology & nursing management of common communicable & non communicable diseases
- Population & its control
- Health education
- Health planning ,policies & problems
- Delivery of community health services

- Community health nursing approaches, concepts, roles & responsibilities of nursing personnel
- National health & family welfare programmes & the role of nurse
- Health agencies – international, national

IV. Child Health Nursing

- Modern concepts of child care-rights of children, national programmes related to child health & welfare, agencies related to welfare services, impact of hospitalization on child & family
- Growth & development from birth to adolescence
- Immunization
- Preventive paediatrics
- Nutritional needs of infants & children
- Nursing care of a neonate- including essential newborn care, low birth weight baby, common neonatal disorders/congenital malformations, neonatal resuscitation etc.
- Integrated management of neonatal & childhood illness (IMNCI)
- Nursing management in common childhood diseases
- Management of behavioural & social problems in children

V. Mental Health

- Principles & concepts of mental health nursing
- Assessment of mental health status
- Treatment modalities & therapies used in mental disorders
- Nursing management of patient with –Schizophrenia &other psychotic disorders, mood disorders, neurotic disorder, substance use disorders, personality, sexual &eating disorder, organic brain disorders
- Psychiatric emergencies & crisis intervention
- Legal issues in mental health nursing
- Community mental health nursing

VI. Midwifery & Obstetrical Nursing

- Pre-conception care & preparation for parenthood
- Maternal morbidity, mortality, fertility rates & perinatal morbidity, mortality rates
- Assessment & management of pregnancy(ante natal)-physiological changes, antenatal care
- Screening , assessment & management for high risk

- Psychosocial & cultural aspects in unwed mother, single parent, teenage pregnancy, sexual violence, adoption
- Assessment & management of intra natal period-mechanism of labour, management in first , second, third & fourth stage of labour
- Assessment & management of abnormal labour
- Assessment & management of postnatal period-postnatal assessment & management, family dynamics after child birth, family planning, postnatal complications
- Assessment & management of normal neonates & high risk newborn
- Family Welfare -methods of contraception, ,counseling for family planning, infertility &itsmanagement, role of nurse

VII. Nursing Research & Statistics

Research:

- Need & scope of nursing research
- Research process -research problem ,review of literature, research approaches & design, sampling & data collection, analysis of data, writing research paper

Statistics:

- Types of measures
- Frequency distribution, graphical presentation of data
- Measures of central tendency

VIII. Communication & Nursing Education (including Educational Technology)

- Communication process-barriers, technique
- Interpersonal relations, human relations
- Guidance & counseling
- Principles of education & teaching learning process
- Curriculum development
- Methods of teaching, educational media
- Assessment /evaluation of teaching and learning
- Information, education & communication for health

IX. Management of Nursing Services & Education

- Introduction to management in nursing
- Management process
- Management of nursing services in hospital & community
- Organizational behaviour & human relations
- Principles of adult learning
- Planning & organization of in-service education programme, evaluation of staff education programme
- Management of nursing educational institutions
- Professional advancement

GENETICS & GENETIC ENGINEERING

SYLLABUS

Cell Biology, Genetics and Genetic Engineering

The cell: Cell theory; viroids and virions; comparative account of prokaryote and enkaryote.

Cell Cycle: Cell division and regulations:
Mitosis, meiosis; mechanism of cell cycle control; Cell succession and cell death (apoptosis); mechanism of cell death and its significance.

Cell Organelles : Ultra structure of mitochondria, golgi compled, nucleus and ribosomes – their function and biogenesis.
Prokaryotie and Eukaryotic chromosome, special type of chromosomes, molecular structure of prokaryotic chromosomes and chemical nature of chromosome.
Nucleic acids; DNA structure; DNA replicalion; enzymes required for replication; is different forms of RNA and their function.

Techniques in cell biology :- Principles of light and electron microscopy – TEM & SEM; phase contrast and fluorescence microscopy.

Mendelism :-Biography of Mendal and his experiments, genotype, phenotype, back cross – test cross, dominance, co-dominance and incomplete dominance, epistatic factors.

Allelism : multiple alleles, pseudoalleles, human blood groups, Hardy-Weinberg law; quantitative traits and quantitative genetics; heritability.

Linkage and recombination:-Linkage and crossing over; chromosome mapping; molecular basis of crossing over.

Sex determination and differentiation: Chromosomal basis of sex determination in Diosophila, man and Melandrium; modern concept of sex determination.

Mutation: Mutagens – types and mode of action; molecular basis of gene mutations.

Alteration in chromosome structure and number:- Origin, types and effects of duplications, inversions and translocation: origin and effects of Autopolyploidy and allopolyploidy.

Elements of Biometry :- Probability, prinomial methods, testing of goodness, chi-square test and its application.

Measurement of variations; Analysis of polygenic traits, Normal curve, mean, mode, median, standard deviation and error.

Genetic code : Features of genetic code.

Gene action : Transcription and translation in prokaryotes and Eukaryotes.

Operon concept : Induciable, repressible, passive and negative gene regulation; interrupted genes in eukoryotes; RNA splicing; mRNA stability.

Recombinant DNA technology: Introduction to Genetic Engineering and cloning, Recombinant DNA, Restriction enzymes.

Techniques in recombinant DNA technology; Gel-electrophoresis (PAGE), Southern, Northern and western blotting.

Cloning vectors : plasmids, cosmids, viruses, and bacteriophages.

Isolation, sequencing and synthesis of gene : Isolation: Isolation of gene of interest; fragmentation methods, shot gun methods, reverse transcriptase.

हिन्दी साहित्य का इतिहासः धाराएँ और प्रबृत्तिगत अध्ययन

(क) काल विभाजन और नागकरण

(ख) आदिकाल की प्रमुख प्रवृत्तियाँ।

(ग) पूर्व मद्यकालः भक्तिकाब्य की प्रमुख धाराएँ - रागुण और निगुर्ण, राम भक्ति शाखा, कृष्ण भक्ति शाखा, सूफीप्रैमाख्यानक काव्य की विशेषताएँ, संत कान्य की विधि

(घ) उत्तर मद्यकालः रितिकाव्य की धाराएँ और प्रवृत्तियाँ

(ङ) आदुनिक कालः नयजागरण युग की प्रमुख प्रवृत्तियाँ, भारतेन्दु हरिश्चंद्र का योगदान, द्धिवेदी युग, छायावाद, प्रगतिवाद, प्रयोगबाद, जनवाद।

(च) हिन्दी गद्यं की प्रमुख विधाएँः उपन्यास, कहानी और नाटक का विकास।

(छ) दियाणियाँः सरहपा, पृथ्वीराज रासो, विद्यापति, अमीर खुसरो , रामनंद, अष्टछाप, रसखान, रहीम, उदंत मार्त्तण्ड; वालकृष्ण भट्रट, अयोध्या सिंह, उपाध्यय " रामचंद्र शुक्ल, माखनलाल चतुर्वेदी, सुगित्रानंदन पंत, गोदान, कागांयनी, रामविलास शर्मा, गुत्तिबोध।

मध्ययुगीन काव्यः संपादक - ब्रजनारायणं सिंह

(क) कबीरः साखी। से ३०:
सहस्य साधना, कवीर का विद्रोह और समाज दर्शन कबीर को राम और तुलसी के राम में अंतर, कवीर की भक्ति भावना।

(ख) सूरदासः पद संख्या १, ४, ५, ७, १०, ११, १४, १७ तथा २० का सूर की भक्ति भावना, वात्सल्य वर्णन, भ्रमरगीत में बामवनैदाध्य सूर काव्य मे मुरली का महंत्व। भ्रमरगीतः विग्रलम्भ श्रृंगार का काव्य।

(ग) तुलसीः विनय पात्रिका १,४,५, पुष्पवाटिका ७, ८। भक्ति भावना, लोगमंगल की भावना, पुष्पवाटिका का काव्य माधुर्य।

(घ) विहारी दोहा संख्या १,३,६,७,८,१०,११,१३,१४,१५,२२,२३,२४,२७ और २८। रीति काव्य में बिहारी का स्थान, बिहारी का स्थान, बिहारी की भाषा, दोहो में गागर में सागर।

(ङ) भूषण पद संख्या १,३,५,७,१०,१४ तथा १५ । भूषण की वीर भावना, भूषण का राष्ट्रप्रेम।

(च) प्रसाद, निराला, पंत और महादेवी की श्रेष्ट रत्तनायें ,सम्पादकः बाचस्पति पाठक।

(क) प्रसादः हिमाद्रि तुंग श्रंग से, जाकरी, मेरे नाविक, अरी वरूणा की शांत कछार, तुमुल कोलाहल कलह में, छायावाद में स्थान, प्रेम और सोन्दर्य भावना, गीतीतत्व।

(ख) निराला- भारती वंदना, वसंत आया, जोगो फिर एक बार, बादल राग। स्नेह निर्झर बह गया है। काव्य सौष्टव, राग और ओज तत्व, सरौज स्मृति की मार्मिकता मुक्त छंद।

(ग) महोदवी- जीवन विरह का जल जात, मधुर मधुर मेरे दीपक जल, तुम मुझमें प्रिय। फिर परिचय क्या, में नीर भरी दुख की बदली, है चिर महान छायावाद में स्थान, विरह भावना, प्रगीत तव्य। आधुनिक युग की मीरा, रहस्यबाद।

(छ) एकत्रः संपादक बच्चन सिंह
अज्ञेयः काव्यगत विशेषताएं नयी कवता ओर अज्ञेय।
नागार्जुनः काव्यगत विशेषताएँ।

(ज) "गद्य के विविध रंग" संपादक- दूधं नाथ सिंह
प्रेमचंद, हजारी प्रसाद द्विबेदी, महोदवी वर्मा, अज्ञेय ओर हरिशंकर परसाई के निबंध तथा निबंध शैली।
नाटकः ध्रुवस्वामिनीः प्रसाद

(झ) उपन्यास गवन प्रेमचन्द्र

(ञ) तमस भीष्म साहनी

(ट) कहानी संग्रह "कथा भारती" संपादकः लश्रमी नारायण लालः कफन, आकाशद्वीप, पराया सुख, गदल।

(ठ) व्याकरणः
संज्ञा, सर्वनाम, संधि, समास, कारक, का प्रयोग, क्रिया के विभिन्न भेद, काल, विशेषण के भेद, वाक्य संशोधन, वाच्य संशोधन, वाच्य, प्रत्यय, उपसर्ग, सार संक्षेप, भाव विस्तार, मुहावरे

SYLLABUS FOR NEPALI

पहिलो पत्रः कविता

पाठ्य विषय :

१. कविताको अर्थ, परिभाषा र नेपाली कविताको विकासक्रमको परिचय।

२. कविता :

लेखनाथ पौड्याल	पाटीमा ढाक्रेको पसारो
बालकृष्ण सम	निम्तो
लक्ष्मीप्रसाद देवकोटा	सन्ध्या
अगमसिंह गिरी	हाम्रो आकाशमनि पनि हुन्छ उज्यालो
पुष्पलाल उपाध्याय	रमाइलो तेजपुर
भूपि शेरचन	मैन बत्तीको शिखा
शोभाकान्ति थेगिम	परिचय मेरो कवितासित
पारसमणि प्रधान	वीरू ड्राइभर

दोस्रो पत्रः कथा र उपन्यास

पाठ्य विषयः

(क) कथाः

गुरूप्रसाद मैनाली	विदा
रूपनारायण सिंह	जिम्मेवारी कसको?
विश्वेश्वप्रसाद कोइराला	दोसी चश्मा
भवानी भिक्षु	हारजीत
शिवकुमार राई	सिन्दुरपोते

इन्द्रबहादुर राई	घोपबाबू
सानु लामा	स्वास्नीमान्छे

(ख) उपन्यासः

रूपनारायण सिंह	भ्रमर
समीरण छेत्री प्रियदर्शी"	बलिवेदी

तेस्रो पत्र : नाटक र निबन्ध

पाठ्य विषयः

(क) नाटक र स्फाङ्कको अर्थ, परिभाषा र नेपाली नाटक एंव एकाङ्कीको विकासक्रमको परिचय

नाटक :

बालकृष्ण सम	अमरसिंह कैशवराज पिंड़ाली खै-खै
भैरव अर्याल	आलु
गोपालप्रसाद रिमाल	माया
मनबहादुर मुखिया	अँध्यारामा बाँच्नेहरू

(ख) निबन्धको अर्थ, परिभाषा र नेपाली निबन्धका विकासक्रमको परिचय

निबन्धः

लक्ष्मीप्रसाद देवकोटा	श्रीगणेशाय नमः हाई हाई अङ्ग्रेजी
बालकृष्ण सम	बानी
हृदयचन्द्रसिंह प्रधान	जुँगा

दोस्रो खण्ड

चौथो पत्रः नेपाली भाषा र साहित्यको परिचय

पाठ्य विषयः

(क) नेपाली भाषा

१. नेपाली भाषाका विकासको सामान्य परिचय।

२. नेपाली व्याकरणका कोटीहरूः

(क) प्रधान व्याकरणिक कोटीहरू- नाम, सर्वनाम, क्रियापद, विशेषण, अव्यय।

(ख) गौण व्याकरणिक कोटीहरू-लिङ्ग, वचन, काल, पक्ष, पुरूष, कारक र वाच्य।

३. नेपाली उखान टुक्का र वाग्धारा

४. धातु र प्रत्यय ।

५. नेपाली शुद्ध लेखनका उपाय।

(ख) साहित्य परिचय

१. कविता, कथा, नाटक, उपन्यास, निबन्धको अर्थ, परिभाषा र तत्त्वहरूको परिचय।

२. छन्द- अर्थ, परिभाषा, प्रयोजन, उपयोगिता र प्रकार तथा छन्द केलाउने तरिकाहरूको अध्ययनसहित तलका छन्दहरूको लक्षण र सोदाहरण परिचयः

झ्याउरे, सवाई, सेलो, आर्या, चौपाया, दोहा, शार्दूलविक्रीड़ित, शिखरिणी, अनुष्टुप तोटक,मन्दाक्रान्ता, इन्द्रवज्रा, उपेन्द्रवज्रा।

३. अलङ्कार-अर्थ, परिभाषा, प्रयोजन र उपयोगिता।

अलङ्कारका प्रमुख प्रकारहरूको जानकारीसहित तलका अलङ्कारहरूका सोदाहरण परिचयः

श्लेष, अनुप्रास, यमक, उपमा, रूपक, दीपक,भान्ति,दृष्टान्त, अपन्हुति, समासोक्ति स्वाभाबोक्ति र व्याजस्तुति।