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NOTIFICATION

No.A.12018/1/85-P & AR (GSW), the 31st July, 1997. In exercise of the powers conferred by the proviso to Article 309 of the Constitution of India, the Governor of Mizoram
Accounts Service Rules, 1991 issued under Notification No.A.12018/1/85-P & AR(C) dated 8. 5. 91 published in the Mizoram Gazette Issue No. 93 dated 10. 5. 91 and No. A. 12018/1/85 P & AR(GS) dated 23. 5. 97 published in the Mizoram Gazette Issue No. 159 dated 6. 6. 97 regulating the recruitment and conditions of service of persons appointed to the Mizoram Finance & Accounts Service.

1 Short title and commencement.

i) These Rules may be called the Mizoram Finance & Accounts Service (Second Amendment) Rules, 1997.

ii) They shall be deemed to have come into force from the date of publication in the Mizoram Gazette.

2. AMENDMENT OF RULE 7

Sub-Rule (1) and (2) are deleted and substituted by the following—

The Mizoram Public Service Commission shall make recommendations to all kinds of appointments and promotions to the Service. In case the Mizoram Public Service Commission ceases to function or not be in a position to consider appointment and promotions, Selection Board as constituted by Government shall make recommendations of all kinds of appointments and promotion to the service.

3. AMENDMENT OF RULE 18 - TRAINING

Under Rule 18, a note shall be inserted as below :—

In case of persons appointed prior to Notification of these rules and whose services were regularised by the Government without training during the probation period they shall be treated as exempted from the operation of this Rule.

4 AMENDMENT OF RULE 19-DEPARTMENTAL EXAMINATION

Under

In the case of the existing incumbents of all categories of posts included in the initial constitution and whose services were regularised by the Govt. without Departmental Examination, they shall be exempted from appearing at and passing the Departmental Examination.

5. AMENDMENT OF RULE 20-CONFIRMATION

Under Rule 20 a new proviso shall be added as below :

Provided that those persons appointed and whose appointments were regularised in accordance with the proviso to Rule 18 and 19 shall be treated as having satisfactorily completed the period of probation and be confirmed in the Junior Grade.

6. AMENDMENT OF RULE 24-CROSSING EFFICIENCY BAR

Under Rule 24 'If any' appeared in the third line may be deleted. A new proviso shall be inserted

Provided that any member of the Service who has been exempted from passing in accordance with Rule 19 shall be considered for Crossing the efficiency bar provided he otherwise satisfies all other conditions.

7. AMENDMENT TO SCHEDULES

In Schedule-II the following amendments shall be made :—

A. SELECTION GRADE :

2.	Joint Secretary, Finance (Budget)	— 1
	Total of 'A'	— 2

B. JUNIOR ADMINISTRATIVE GRADE :

1.	Joint Director of Accounts & Treasuries	— 2
2.	Director of State Lotteries	— 1
	Total of 'B'	— 5

C. SENIOR GRADE :

1.	Deputy Director of Accounts & Treasuries	— 3
2.	Director of State Lotteries Deleted and Sl. No. 4 will become Sl. No. 3.	—
	Total of 'C'	10

E. Total of A+B+C+D = 2+4+11+32 = 49

G. Grand Total of E+F = 49+9.6 = 58.6

Total = 58.6.
Say = 59 posts.

B. SCHEDULE—III—A

In Schedule-III- the following amendments are made :—

The whole syllabus for competitive examination for direct recruitment to Junior Grade of MFAS is substituted as follows : –

Sl. No.	Subject	Time	Full Marks
1.	General Studies (Paper-I and II) Details as shown in Annexure-I.		
	a) Paper – I	3 hrs.	100
	b) Paper – II	3 hrs.	100
2.	General English including Drafting and Precis Writing.	3 hrs.	100
3.	Mathematics (of HSLC Standard).	3 hrs.	100
4.	One optional subject (Paper I & II each) on any of the following subjects offered at Degree level examinations of a recognised University.		
	a) Paper – I	3 hrs.	100
	b) Paper – II	3 hrs.	100

OPTIONAL SUBJECTS (PAPER – I & II EACH)

i) Botany
ii) Chemistry
iii) Commerce & Accountancy
iv) Economics
v) Education
vi) English
vii) Forestry
viii) Geography
ix) Geology
x) History

xi) Home Science
xii) Law
xiii) Mathematics
xiv) Mizo
xv) Philosophy
xvi) Physics
xvii) Political Science & International Relations.
xviii) Public Administration.
xix) Zoology
xx) Sociology

Syllabus for Optional Subjects are as in the Annexure - II.

5. VIVA - VOCE
(In respect of candidates, who qualified in the written examination. 100

Vanhela Pachuau,
Commr. & Secretary to the Govt. of Mizoram.

ANNEXURE—I

DETAILS OF GENERAL STUDIES

General Studies paper—I and paper—II it will cover the following areas of knowledge:-

PAPER—I

1. Modern History of India and Indian Culture.

2. Current events of national and inter-national importance.

3. Statistical analysis, graphs and diagrams.

PAPER—II

1. Indian Polity

2. Indian economy and Geography of India and

3. The role and impact of science and technology in the development of India.

In paper-I, Modern History of India and Indian Culture will cover the broad history of the country from about the middle age of the nineteenth century and would also include questions on Gandhi, Tagore and Nehru. The part relating to statistical analysis, graphs and diagrams will include exercise to test the candidates

ability to draw common sense conclusions from information presented in statistical, graphical or diagramatical form and to point out deficiencies, limitations or inconsistencies therein. In Paper-II, the part relating to Indian Polity will include questions on the political system in India. In the part pertaining to the Indian Economy and Geography of India, questions will be put on planning in India and the physical economic and social geography of India. In the third part relating to the role and impact of science and technology in the development of India, questions will be asked to test the candidates awareness of the role and impact of science and technology in India, emphasis will be on applied aspects.

ANNEXURE - II

SYLLABUS FOR OPTIONAL SUBJECTS SPECIFIED IN SCHEDULE-III OF THE MIZORAM FINANCE AND ACCOUNTS SERVICE (SECOND AMENDMENT) RULES, 1997.

OPTIONAL SUBJECTS

PAPER - I BOTANY

1 Microbiology, Viruses, bacteria, plasmids - structure and reproduction, General account of infection and immunology, Microbes in agriculture, industry and medicine and air, soil and water. Control

2. Pathology : Important plant diseases in India caused by viruses, bacteria, mycoplasma, fungi and nomotodes. Modes of infection, dissemination, physiology and parasitism and methods of control, Mechanism of action of biocides, Fungal toxins.

3. Cryptogams : Structure and reproduction from evolutionary as ect and ecology and economic importance of algae, fungi, bryophytes and pteridophytes, Principal distribution in India.

4. Phanerogams : Anatomy of wood, secondary growth Anatomy of C2 and C plants, stomatal types Embryology, barriers to sexual incompatibility. Seed structure, poximis and polyembryony. Polynology and its applications. Comparison of systems of classification of angiosperms. Modern trends in biosystematics, Taxanomic and economic importance of Cycadaceae, Pinaceae, Gnetabes, Magneliacease, Ranunculaceae, Cruciferae, Rasaceae, Leguminasae, Euphorbiaceae, Malvaceae, Dipterocarpaceae, Umbe-lliforae, Asclepiaceae. Verbaneseae, Solanceae, Rubiaceae, cucurbitaceae composite, Gramineae, Plame, Liliaceae, Musaceae and Orchidaceae.

5. Morphogenesis : Polarity, summetry and tolipotency. Defferentiation and differentiation of cells and organs. Factors of morphogenesis. Methodology and applications of cell, tissues, organ and protoplast cultures from vegetative and reproductive parts, Somatic hybrids.

PAPER - II

1. Cell Biology : Scope and perspective. General knowledge of modern tools and techniques in the study of cytology. Prokaryotic and eukaryotic cells structural and ultrastructural details. Functions of organelles including membrances. Detailed study of mitosos and melosis. Numerical and structural variations in chromosome and their significance. Study of Polyrene and lampbrushchromosomes structure, behaviour and cytological significance.

2. Genetics and Evolutions : Development of genetics and gene concepts. Structure and role of nucleic acids in protein synthesis and reproduction. Genetic code and regulation of gene expression. Gene amplification. Mutation and evolution. Multiple factors, linkage and crossing ober. Methods of gene mapping. Sex chromosomes and sexlinked inheritance. Malesterility its significance in land breeding. Cytoplasmic inheritance. Elements of human genetics. Standard deviation and Chi-square analysis genetics engineering. Organ evolution evidence mechanism and theories.

3. Physiology and Biochemistry : Detailed study of water relations. Mineral nutrition and iron/transport. Mineral deficiencies. Photosynthesis-mechanism and importance, photosystems I and II, Photorespiration. Respiration and fermentation. Nitrogen fixation and nitrogen metabolism, Protein synthesis. Enzymes, Importance of secondary metabolites. Pigments as photoreceptors, photoperiodism, flowering. Growth indices, growth movements. Senescene.

Growth substances-their chemical nature, role and applications in agri-horticulture. Agrochemicals. Stress physiology Vernalization Fruit and seed physiology-dormancy, storage and germination of seed. Perthenocarphy fruit ripening.

4. Ecology : Ecological factors. Coucept and dynamics of community, sucession. Concept of biospheres. Conservation of ecosystems. Pollution and its control. Forest types of India. Afforestation, deforestation and social forestry. Endangered plants.

5. Economic Botany : Origin of cultivated plants. Study of plants as sources of food, fodder and forage, fatty oils, wood and timber, fibre, paper, rubber, beverages, alcohol, drugs, narcotics, resins and gums, essential oils, dyes, mucilage, insecticides and pesticides. Plant indicators, Ornamental plants. Energy plantation.

PAPER-I CHEMISTRY

1. Atomic structure and chemical bonding :

Quantum theory, Heisenberg's uncertainty principle, Schrodinger wave equation (time independent). Interpretation of the wave function, particle in a one-dimensional box, quantum numbers, hydrogen atom wave functions, Shapes of s. p. and orbitals Lonic bond, Lattice energy, Born Haber cycle, Fajans rule, dipole moment, characteristics of ironic compounds electronegativity differences, Covalent bond and its general characteristics valence bond approach. Concept of resonance and resonance energy. Electronic configuration of H2 + H2 N2 02 F2 NO. CO and HF molecules in terms of molecular orbital approach. Sigma and pi bonds. Bond order, bond strength and bond length.

2. Thermodynamics : Work heat and energy. First law of thermodynamics, Enthalpy, heat capacity. Relationship between CP and Cp. Laws of thermochemistry, Kirchoff's equation. Spontaneous and non-spontaneons change. Second law of thermodynamics. Entropy changes in gases for reversible and irreversible processes. Third law of thermodynamics. Free energy, variations of free energy of a gas with temperature, pressure and volume Gibbs-Helmholz equation. Chemical potential. Thermodynamics criteria for equilibrium. Free energy charge in chemical to action and equilibrium constant. Effect of temperature and pressure on chemical equilibrium. Calculation of equilibrium constants from thermodynamic measurements.

3. Solid State : Forms of solids, law of constancy of enterrfacial angles Crystal systems and crystal classes (crystallographic groups) Designation of crystal faces, latics structure and unit cell. Laws of rationals indices. Bragg's law X-Ray diffraction by crystals. Deffects in crystals. Elementary study of liquid crystals.

4. Chemical kinetics : Order and molecularity of a reaction. Rate of equations (differential and integrated forms) of zero, first and second order reactions. Half life of a reaction. Effects of temperature, pressure and catalysts on reaction rates. Collision theory of reaction rates of bimolecular reactions. Absolute reaction rate theory. Kinetics of polymerisation and photo chemical reactions.

5. Electrochemistry : Limitations of Atthenius theory of dissociation. Debye-Huckel theory of strong electrolytes and its quantitative treatment. Electrolytic conductance theory and theory of activity co-efficients. Derivation of limiting laws of various equilibria and transport properties of electrolyte solutions.

6. Concentration cells, liquid junction potential, application of e.m f. measurements of fuel cells.

7. Photochemistry : Absorption of light. Lambert-Beer's law. Law of photochemistry. Quantum efficiency.
toelectric cells.

8. General Chemistry of 'd' block elements :

(a) Electronic configuration, Introduction to theories of bounding in transition mental complexes, Crystalfield Theory and its modifications, applications of the theories in the explanation of magnetism and electronic spectra of metal complexes.

(b) Metal Carbonyes : Cyclopentadienyl, Olefin and Acetylene complexes.

(c) Compounds with metal – mental bonds and atom clusters.

9. General Chemistry of 'f' block elements : Lanthanides and actinides, Separations, Oxidation States, magnetic and special properties.

10. Reactions in non-aqueous solvents (liquid ammonia and sulphur dioxide)

PAPER - II

1. Reaction mechanisms : General methods (both kinetic and non-kinetic) of study of mechanisms of organic reactions illustrated by examples.

Formation and stabi ity of reactive intermediates (carbocations. carbonions free radicals, carbenes, nitrens and benzynes)

SN1 and SN2 mechanism - HI, E2, and ElcB eliminations. cis and trans addition to carbon to carbon double bonds mechanism of addition to carbon-oxygen double bonds. Michael addition-addition to conjugated carbon carbon double bonds-aromatic electrophilic and nucleophilic substitutions allylic and benzylic substitutions.

2. Pericyclic reactions : Classification and examples an elementary study of Woodward-Hoffman rules of the pericyclic reactions.

3. Chemistry of the following name reactions : Aldol condensation, Claisen condensation, Dieckmann reaction, Perkin reaction, Reimer-Tiemann reaction, Cannizzro reaction.

4. Polymeric Systems :

(a) Physical Chemistry of polymers; End group analysis, Sedimentation, Light Scattering and Viscosity of polymers.

(b) Polyethelene, Polystyrene, Polyvinyl Chloride, Ziegler Natta Gatalysis, Nylon, Terylene.

(c) Inorganic Polymeric Systems, Phosphonitric balide compounds; Silicones; Borazines.

Friedel-Craft reactions, Reformatsky reaction, pinacol-pinacolone, Wagner-Meerwein and Beckmann rearrangements, and their mechanisms-uses of the following reagents in organic synthesis : 05 04 H10, NBS, diborane, Na-liquid ammonia NaBH4 LIA IH4.

5. Photochemical reactions of organic, and in organic compounds : Types and of reactions examples an synthetic uses-methods used in structure determination, Principles and application of UV-visible, IR 1H2, NMH and mass

6. Molecular Structural determinations : Principles and Applications to simple organic and in-organic Molecules.

(i) Rotational spectra of diatomic molecules (Infrared and Raman), isotopic substitutions and rotational constants.

(ii) Vibrational spectra of diatomic linear symmetric, linear asymmetric and bent triatomic molecules (Infrared and Raman).

(iii) Specificity of the functional groups (Infrared and Raman).

(iv) Electronic Spectra-Singlet and triplet states, conjugated double bonds, aB unsaturated corbonye compounds.

(v) Nuclear magnetic Resonance : Chemical shifts, spin-spin coupling.

(vi) Electron Spin Resonance : Study of inorganic complexes and free radicals.

COMMERCE AND ACCOUNTANCY

PAPER—I Accounting and Finance.

Part I : Accounting, Auditing and Taxation.

Accounting as a financial information system-impact of behavioural sciences. Methods of accounting of changing price levels with particular reference to Current Purchasing Power (CPP) accounting Advanced problems of company accounts. Amalgamation absorption and reconstruction of companies-Accounting of holding companies Valuation of shares and goodwill-Controllership functions property control legal and management.

Important provisions of the Income Tax Act, 1961-Definition Change of Income-Tax Exemptions Depreciation and investment allowance-Simple Problems of computation of income under the various heads and determination of assessable income-Income-Tax authorities.

Nature and functions of Cost-Accounting-Cost classification-Techniques of regragating semivariable costs into fixed and variable components-job costing FIFO and weighted average methods of calculating equivalent units of production-Reconciliation of cost and financial accounts-marginal costing Cost-Volume profit relationship; Algeveric formulae and graphical representation-Shutdown point-Techniques of cost control and cost reduction budgetary control-flexible budgets-Standard costing and variance analysis-Responsibility accounting-bases of charging overheads and their inherrent fallacy costing for pricing decision. Significance of the attest function-Programming the audit work-Valuation and verification of assets, fixed wasting and current assets-Verification of liabilities Audit of limited companies appointment status powers, duties and liabilities of the auditor-Auditor's report-Audit of share capital and transfer of shares-Special points in the audit of banking and insurance companies.

PART II : Business, Finance and Financial Institutions.

Cocept and scope of Financial Management-Financial goals of corporations Capital budgeting; Rules of the thumb and Discounted cash flow approaches-Incorporating uncertainty in investment decisions. Designing and optional capital structure-Weighted average cost of capital and the controversy surrounding the Modigliani and Miller model, Sources of rising short-term intermediate and long-term finance role of public and convertible debentures-Norms and guidelines regarding debt-equity ratios Determinants of an optitional dividend policy-optimising models of James En. Walter and John Liner, forms of dividend payment-

Structure of working capital and the variable affecting the level of difference of components–Cashflow approach of forecasting working capital needs–profiles of working capital in Indian Industries–Credit management and Credit Policy–Consideration of Tax in relation to Financial Planning and cash flow statements. Organisation and efficiencies of India Money Market structure of assets and liabilities of Commercial Banks–Achievements and failures of Nationalisation–Regional Rural Banks–Recommendations of the Tendon (P.L) Study Group on of Bank Credit, 1976 and their revision by the Chore (K B.) Committee, 1979 An assessment of the monetary and credit Policies of the Reserve Bank of India Constituents of the Indian Capital Market Functions and working of all India term Financial institutions (IDBI, IFCI, ICICI, and IRCI)-Investment policies of the Life Insurance Corporation of India and the Unit Trust of India Present state of stock exchanges and their regulation. Provision of the Negotiable Instruments Act, 1881, Crossings and endorsements with particular reference to statutory protection to the paying and collecting bankers. Salient provision of the Banking Regulation Act, 1949 with regard to chartering supervision and regulation of banks.

PAPER II

ORGANISATION THEORY AND INDUSTRIAL RELATIONS

Part I : Organisation Theory.

Nature and concept of Organisation–Organisation goals : Primary and Secondary goals, Single and multiple goals, ends means chain-Displacement, succession, expansion and multiplication of goals–Formal organisation, Type, Stucture–Line and staff, functional matrix and project–informal organisation–functions and limitations.

Evolution or organisation theory :

Classical, Neo–classical and system approach–Bureaucracy, Nature and basis of power, sources of power, power structure and politics–Organisational behaviour as a dynamic system : technical, social and power systems–inter–relations and interactions–Perception–Status system. Theoretical and empirical foundation of Maslow, Mc Gregor, Herxberg, Likert, Vroom, Porter and Lawler, Adam – Homan's Model of motivation. Morale and productivity–Leadership : Theories and styles–Management of conflicts in organisation–Transactional Analysis Significance of culture to organisations, Limits of rationality–Simon–March approach. Organisational change, adaptation, growth and development–Organisational control and effectiveness.

Part II : Industrial Relations :

Nature and scope of industrial relations, industrial labour in India and its commitment–Theories of unionism–Trade Union movement in India–Growth and structure–Role of out-side leadership–Workers education and other problems–Collective bargaining–approaches conditions, limitation and its effectiveness in Indian conditions–Workers participation in management; philosophy, rationale, present day state of affairs and its future prospects.

Prevention and settlement of industrial disputes in India ;

Preventive measures, settlement machinery and other measures in practice-Industrial relations in public enterprises-Absenteeism and labour turnover in Indian industries-Relative wages and wage differentials ; wage policy in India-the Bonus issue-International labour Organisation and India-Role of personnel department in the organisation-Executive development, personnel policies, personnel audit and personnel research.

ECONOMICS

PAPER I

1. The framework of an Economy ; National income Accounting.

2. Economic choice : Consumer behaviour and market forms.

3. Investment decisions and determination of income and employment. Macro-economic models of income. distribution and growth.

4. Banking, Objectives and instruments of Central Banking and Credit policies in a planned developing economy.

5. Types of taxes and their impacts on the economy. The impacts of the size and the content of budgets. Objectives and Instruments of budgetary and fiscal policy in a planned developing economy.

6. International trade. The rate of exchange. The balance of payment. International monetary

ECONOMICS

PAPAR II

1. The Indian Economy : Guiding principles of Indian economy policy-Planned growth and distributive justice--

   Eradication of poverty. The institutional framework of the Indian economy. Federal governmental structure. Agriculture and industrial sectors-Public and private sectors. National income-its sectoral and regional distribution. Extent and incidence of poverty.

2. Agricultural Production : Agricultural Policy : Land Reforms, Technological change. Relationship with the Industrial sector.

3. Industrial Production : Industrial Policy : Public and private sectors. Regional distribution. Control of monopolies and monopolistic practices.

4. Pricing Policies for agricultural and industrial outputs. Procurement and public Distribution.

5. Budgetary trends and fiscal policy.

6. Monetary and credit trends and policy — Banking and other financial institutions.

7. Foreign trade and the balance of payments.

8. Indian Planning : Objectives, strategy, experience and problems.

EDUCATION

PAPER I HUMAN DEVELOPMENT AND EDUCATION.

1. Education and Psychology :

Nature, Scope and Relationship between Education & Psychology; Role of Educational Psychology in the field of Education.

2. Growth and Development :

Meaning of Growth Development and Maturation; Principles of Growth and Development and their Educational Implications; Physical, Emotional, Social, Language and Intellectual Development at various stages with special emphasis on Adolescence period; Piaget's stages of cognitive Development.

3. Intelligence and Creativity :

Meaning and Nature of Intelligence and Creativity; Spearman's and Thurstone's theories of Intelligence; Role of Education in the development of creativity

4. Equality of Educational Opportunities :

Policy measures and status; Education as an instrument of social change and modernisation; Role of Education in value Development.

5. Learning and Motivation :

Nature of Learning and Motivation; Learning theories of Pavlov, Skinner and Tolman; Transfer of Learning; Role of Motivation in Learning.

6. Personality and Mental Health :

Concepts of Personality and Mental Health; Type and Trait approaches to personality; Techniques of personality assessment: Adjustment Mechanisms, Role of Guidance and Councelling in the improvement Mechanisms, Role of Guidance and Councelling in the improvement of Maladjusment.

PAPER II EDUCATIONAL THOUGHT AND SYSTEMS

1. Legal and Constitutional provision of Education Role of local bodies state and centre in providing education.

2. Contribution to Education of Dewey, Gandhi, Tagore and Montessori.

3. Modern Trends and practised in Education, Educational Technology and Mass Media, International Cooperation in Education Distance Education and open learning systems, Environmental Education; National Literacy Mission (NLM).

4. Need and Importance of Educational Aims; Immediate and Ultimate aims of Education, Process of Educational planning Budgetting, accounting as auditing in Education.

5. (a) Objectives and Curriculum, Organisational set-up Finance and Resource Mobilisation recommended by

(i) Kothari Commission (1964–66)
(ii) New Education Policy (1986) and its revised version (1992)

(b)
(i) School without burden (Yaph Paul Committee)
(ii) Education for all (Delhi summit)

(c) Education in the North-East with special reference to
(i) Special cultural and organisational features of tribal communities.
(ii) Problems and Issues
(iii) Role of Education in the modernisation of Tribal Communities.

ENGLISH ELECTIVE

PAPER I 100 marks

A detailed literary study of the Victorian Era with special reference to the works of the following writers :–

1. Alfred Lord Tennyson
2. Robert Browning
3. Rosetti
4. Mathew Arnold
5. Swinburne
6. Thackeray
7. George Eliot
8. Thomas Hardy
9. John Ruskin
10. Thomas Carlyle
11. John Stuart Mill
12. Walter Pater

PAPER II 100 marks

First-hand reading of the following texts to test critical ability :-

1.	Shakespeare	Twelfth Night King Lear The Tempest
2.	Milton	Samson Agonistes
3.	Jane Austen	Pride and Prejudice
4.	Wordsworth	Lyrical Ballads
5.	Charles Dickens	Oliver Twist
6.	George Eliot	Adam Bede
7.	Thomas Hardy	The Return of the Native
8.	Yeats	Easter, 1916 Sailing to Bysantuim The Tower The Winding Stair
9.	T.S. Eliot	The Wasteland
10.	D.H. Lawrence	Sons and Lovers

FORESTRY

PAPER I

NOTE : (Candidates will be required to answer 6 questions. There will be 10 questions in Paper 1. The candidates will required to attempt one compulsory question and five from the rest, selecting at least one question each from section A, B and C).

Section A. Silviculture.

General Silviculture principles; ecological and physiological factors influencing vegetation; natural and artificial regeneration of forests; nursery techniques; seed techology collection, storage, pretreatment and germination; establisment and tendings. Silviculture systems: Clear felling uniform, shelterwood selection, coppice and conversion systems, Silviculture of some of the economically important species of India such as Cedrus deodara, Pinus roxburghii, Acacia Catechu, Acacia auriculiformis, Acacia nilotica, Albizzia spp., Artocarpus spp., Bambusa spp., Casuariana equsetafolia, Calbergio spp., Anogeissus spp., Dipterocerpus spp., Calyptus spp., Gmelina arborea, Lager stroemia spp., Populus spp. Salmalia/malabarica, Shorea robusta, Tectona grandis, Terminalia spp, Social Forestry objectires, scope, necessity, agro forestry, extension forestry; recreation forestry, peoples participation.

Section B Forest Mensuration ann Management.

Method of measuring diameter, girth, height and volume of trees; form factor; volume estimation of stand; sampling methods; yield caculation; current annual increment; mean annual increment; sample plots; yield and stand tables; scope

and objectives of forest inventory; (aerial survey and remote sensing techniques). Forest management objectives and principles; techniques; sustained yield relation; normal forest; growing stock; regulation of yield methods and application, working plans preparation and control.

Section C. Forest Utilisation.

Logging and extraction techniques and principles; transport, storage and sale. Minor forest product definition and scope, gums; resins, olearosins fibres, oil seeds nuts, rubber, canes, bamboo, medicinal plants, charcoal, apiary, sericulture las and chellac, tassar silk, Katha and Bidi Leaf. 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 and rayon, Saw milling, wood seasoning and preservation.

PAPER II

(Note : Candidates will be required to answer 6 questions. There will be 10 questions in Paper II. The candidates will be required to attempt one compulsory and one question each from sections A,B,C, D&E).

Section A. 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.

Section B. Forest Ecology and Forest Biology.

Biotic and abiotic components of forest ecology; forest ecosystems; forest community concepts; vegetation concepts; ecological succession and climax; primary productivity nutrient cycling and water relations; physiology in stress environments (drought, water logging, alkalinity and salinity); composition of forest types in India, species composition and associations; dendrology, texonomic classifications, identification of species principles and establishment of herbaria and arboreta, Principles and concepts of tree improvement; methods and techniques, exotics. Ecology and biology of Wildlife; principles and techniques of managements; endangered species, wildlife conservation.

Section C. Forest Economics. Policies and Legislation.

Fundamental Principles of forest economics, costs benefits analysis; estimation of demand and supply; assessment and projection of market structures; role of corporate Financing; socio-economic analyses of forest productivity and attitudes. History of forest development; Indian forest policy of 1894, 1952; and 1988 National Commission on Agriculture report on forestry; Constitution of Wasteland Develoment Board, Indian Council of Forestry, Research and Education, Forest law; necessity, general principles; Indian Forest Act, 1927; Forest Conservation Act, 1980, Wildlife (Pratection) Act, 1972.

Section D. Forest Surveying and Engineering.

Different methods of survey chain, prismatic, compass, planetable 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.

Section E. Forest Soils and Soil Conservation.

Forest soils : Classification; factors affecting soil formation; physical and chemical properties.

Soil Conservation definitional causes of erosion ; types wind and water erosion ; conservation and management of eroded areas; windbreakes, shelter belts, fixation of sand dunes, reclamation of alkaline, saline, water logged and other waste lands.

Watershed management objective and methods.

GEOGRAPHY

PAPER I

Principles of Geography.

Section A. Physical Geography :

1. Geomorphology– Origin and evolution of the earth's crust : earth movements and plate tedtonics; volcanism; rocks; weathering and erosion; cycles of erosion-Davis and Penok fluvial, glacial and marine and Karstlandforms; rejuvenated and polycylic land–forms.

2. Climatology - The atmosphere, its structure and composition; temperature humidity, precipitation pressure and winds; jet stream; air masses and fronts; cyclones and related phenomena; climatic classification. Koeppon and Thorthwalt; groundwater and hydrological cycle.

3. Soils and Vegetation – Soil genesis, classification and distribution; Biotic successions and major buotic regions of the world with special reference to ecological aspects of Savanna and monsoon forest biomes.

4. Oceanograhy – Ocean bottom relief; salinity; currents and tides; ocean deposits and coral reefs, marine resource-biotic mineral and energy resources and their utilisation.

5. Ecosystem – Ecosystem concept, interrelations of energy flows, water circulation geomorphic processes, biotic communities and soils; land capability; Man's impact on the ecosystem, global ecological imbalances.

Section B: Human and Economic Geography.

1. Development of Geographical Thought - Contributions of European and Arab Geographers. Determinism and possibilism; regional concept; system approach, models and theory; quantitative and behavioural revolutions in geography.

2. Human Geography - Emergence of man and races of mankind; cultural evolution of man; Major cultural relays of the world; international migrations, past and present; world population distribution and growth; demographic transition and world population problems.

3. Settlements Geography - Concepts of rural and urban settlements; Origin of urbanization; Rural settlement pattern; central place theory; ranksize and primate city distributions; city classifications; urban spheres of influence and the rural urban fringe; the internal structure of cities-theories and cross cultural comparisions, problems of urban growth in the world.

4. Political Geography - Concepts of nation and state; frontiers, boundaries and buffer zones; concept of heartland and rainland; federalism; political regions of the world; world geopolitics; resources, development and international politics.

5. Economic Geography - World economic development-measurement and problems; world resources, their distribution and global problems; world energy crisis; the limits to growth; world agriculture-typology and world agricultural regions theory of agricultural location, diffusion of innovation and agricultural efficiency; world food and nutrition problems; world industry - theory of location of industries, world industrial patterns and problems; world of trade-theory and world patterns.

GEOGRAPHY OF INDIA

PAPER II

Physical Aspects - Geological history, physiography and drainage systems; origin and mechanism of the Indian monsoon, identification and distribution of drought and flood prone areas; soils and vegetation; land capability; schemes of natural physiographic drainage and climate regionalisation.

Human Aspects - Genesis ethnic/racial diversities; tribal areas and their problems and role of language, religion and culture in the formation of regions; historical perspectives and unity and diversity; population distribution, density, and growth, population problems and policies.

Resources Conservation and utilisation of land mineral, water, biotic and marine resources; man and environment-ecological problems and their management.

Agriculture - The infrastructure, irrigation, power fertilizers. and seeds, institutional factors-land holdings, tenure, consolidation and land reforms; agricultural efficiency and productivity; intensity of cropping, crop combinations and agricul-

tural regionalisation, green revolution, dry zone agriculture, and agricultural land use policy; food and nutrition; Rural economy, animal husbandry, social forestry and household industry.

Industry– History industrial development factors of localisation; study of mineral based; agro-based and forest based industries, industrial decentralization and industrial policy; industrial complexes and industrial regionalisation, identification of backward areas and rural industrialisation.

Transport and Trade-Study of the network of roadways, railways, airways and waterways, competition and complimentarilyin regional context; passenger and commodity flows, intra and interregional trade and the role of rural market centres.

Settlements— Rural settlement patterns; urban developmant in India; Census concepts of urban areas, functional and their archical patterns of Indian cities, city regions and the rural-urban fringe; internal structure of Indian cities; town planning slums and urban housing; national urbanisation policy.

Regional Development and Planning– Regional policies in Indian Five Years Plan; experience of regional planning in India, multi-level planning state, district and block level planning, Centre-State relations and the constitutional frame-work for multi-level planning. Regionalisation for planning for metropolitan regions; tribal and hill areas, drought prone areas, command areas and river basins; regional disparities in development in India.

Political Aspects– Geographical basis of Indian federalism, state reorganisation; regional consciousness and national integration; the international boundary of India and related issues; India and gropolitics of the Indian Ocean area.

GEOLOGY

PAPER I

(General Geology, Geomorphology, Structural Geology, Palaeontology and Stratigraphy).

1. General Geology :

Energy in relation to Geo-dynamic activities, Origin and interior of the Earth, Dating of rocks by various methods and age of the Earth, Volcanoes–causes and products; volcanic belts. Earthquakes causes, geological effect and distribution; relation to volcanic belts.

Geosynclines and their classification, Island areas, deep sea trenches and mid-ocean ridges, sea–floor spreading and plate tectonics, Isostracy Mountains-Types and origin. Brief ideas about continental drift, Origin of continents and oceans. Radioactivity and its application to geological problems.

2. Geomorphology:

Basic concepts and significance. Geomorphic processes and parameters. Geomorphic cycles and their interpretation. Relief features; topography and its relation to structures and lithology. Major landforms Drainge systems. Geomorphic features of Indian sub-continent.

3. Structural Geology:

Stress and strain ellipsoid, and rock deformation. Mechanics of folding and faulting. Linear and planer structures and their genetic significance. Petrofabric analysis, its graphic representation and application to geological problems. Tectonics frome-work of India.

4. Palaeontology:

Micro, and Macro-fossils, Modes of preservation and utility of fossils General Idea about classification and nomenclature. Organic evolution and the bearing of Palaeontological studies on it.

Morphology, classification and geological history including evolutionary trends of branchiopods, bivalves, gortropods, ammonoids, trilobites, echinoids and corals.

Principal groups of vertebrates and their main morphological characters, Vertebrates life through ages; dinosaurs; Siwalik vertebrates. Detailed study of horses, elephants and man, Gondwana flora and its importance.

Types of microfossils and their significance with special reference to petroleum exploration.

5. Stratigraphy:

Principles of Stratigraphy, Stratigraphic classification and nomenclature. Standard stratigraphical scale, Detailed study of various geological systems of Indian sub-continent Boundary problems in Stratigraphy. Correlation of the Major Indian formation with their world equivalents. An outline of the Stratigraphy of various geological systems in their type areas. Brief study of climates and igneous activities in Indian sub-continent during geological past. Paleographic preconstructions.

PAPER II.

(Crystallography, Mineralogy, Petrology and Economic Geology).

1. Crystallography :

Crystalline and non-crystalline substances. Special groups, Lattice symmetry. Classification of crystals into 32 classes of symmetry, International system of crystallographic notation. Use of stereographic projections to represent crystal symmetry. Twinning and twin laws. Crystal irregularities. Application of X-Rays for crystal studies.

2. Optical Mineralogy :

General principles of optics Isotropism and anisotropism : concepts of optical indicatrix. Pleochroiusm ; interference colours and extinction. Optic orientation in crystals. Dispersion, optical accessories.

3. Mineralogy :

Elements of crystal chemistry–types of bondings, Ionic radiicoordination number Isomorphism polymorphism & pseudomorphism. Structural classification of silicates. Detailed study of rockforming mineral their physical, chemical and optical properties, and uses, if any–Study of the alteration products of these minerals.

4. Petrology :

Magma, Its generation, nature and composition, Simple phase diagrams of binary and ternary systems, and their significance, Bawen's Reaction Principle. Magnatic differentation, assimilation.

Textures and structures, and theirapetrogenotic significance, Classification of igneous rocks. Petrography and Petrogenesis of important of important rock-types of India ; granites and granites charnockites, Deccan basalts. Processes of formation of sedimentary rock. Diagenesis and lithification. Textures and structures and their significamce, classification of Sedimentary rocks, classic and non-classic. Heavy mineral and their significance. Elementary concept of depositional environments, sedimentary facies and provenence. Petrography of common rock types.

Variable of metamorphism. Types of metamorphism metamorphic grade., zones and facies ACE AKE and AEM diagrams. Textures, structures and nomenclature of metanorphic rocks. Petrography and petrogenesis of important rock type.

5. Economic Geology :

Concept of ore, ore mineral and gangue : tenor of ores. Processes of formation of meneral deposits. Common forms and structures of ore deposits. Classification of ore deposits. Control of ore deposition. Metalloginitic epochs. Study of important metallic and non–metalic deposits, oil and natural gas fields. and coal fields of India. Mineral wealth of India Mineral economics. National Mineral Policy, Conservation ann utilisation of minerals.

6. Applied Geology :

Essentials of prospecting and exploration techniques.
Principle methods of mining, sampiing. ore-dressing and beneficiation. Application of Geolagy in Engineering works. Elements of soil and ground–water geology and geochemistry. Use of serial photographs in geological investigations.

HISTORY

PAPER I

SECTION A :

History of India (Down to A.D. 750)

1. The Indus Civilisation.

Origins: Extent: Characteristic features; Major cities. Trade and contacts, causes of decline Survival and continuity.

2. The Vedic Age.

Vedic Literature. Geographical area known to Vedic Texts. Differences and simitacities, between Indus civilization and vedic Culture Political, Social and Economic patterns. Major Religious ideas and rituals.

3. The Pre-Maurya Period.

Religious movements (Jainism, Buddhism and other sects). Social and Economic Conditions Republic and growth of Magadha Imperialism.

4. The Maurya Empire.

Sources, rise, extent and fall of the empire, Administration, Social Economic Conditions, Ahoka's Policy and reforms Act.

5. The Post-Maurya Period (200 B.C. -300 A.D.)

Principal dynasties in Northern and Southern India. Economy and Society; Sanskrit, Prakit and Tamil Religion (Rise of Mahayana and their stick cults) Art (Gandhara, Mathura and other schools). Contacts with Central Asia.

6. The Gupta Age.

Rise and fall of the Gupta Empire, the Vakatakas, Administration Society Economy, Literature, Art and Religion. Contacts with South East Asia.

7. Post-Gupto Period (B.C. 500–750 A.D.).

Pushyabhytis, The Mukharis. The later Guptas. Harshvardhana and his times. Chalukyas of Badami. The Pallavas, Society, Administration and art. The Arab conquest.

8. General review of Science and Technology, Education and Learning.

SECTION B

MEDIEVAL INDIA

(750 A.D. to A.D,)

INDIA : 750 A.D. to 1200 A.D.

1. Political and Social Conditions; the Rajputs their Polity and Social structure, land structure, and its impact on Society.

2. Trade and Commerce.

3. Art, Religion and Philosophy; Sankaracharya.

4. Maritime Activities; contacts with the Arabs, Mutual, Cultural impacts.

5. Rashtrakutas, their role in History-Contribution to Art and Culture—The Chola Empire Local Self-Government, features of the Indian Village Systems; Society, Economy, Art and Learning in the South.

6. Indian Society on the eve of Mahmud of Ghazni's Campaigns; Al-Biruni's Observations.

INDIA : 1200—1765

7. Foundation of the Delhi Sultanate in Northern India; causes and Circumstances; its impact on the Indian Society.

8. Khilji Imperialism, significance and Implications, Administrative and Economic regulations and their impact on State and the people.

9. New Orientation of State Policies and Administrative Principles under Muhammad-bin-Tughlag; Religious Policy and Public Works of Firos Shah.

10. Disintegration of the Delhi Sultanate : Causes and its effects on the Indian Policy and Society.

11. Nature and character of State; Political ideas and institutions. Agrarian structure and relations, growth of Urban Centres, Trade and Commerce, Conditions of artisans and peasants, new Crafts, Industry and Technology. Indian Medicines.

12. Influence of Islam on Indian Culture. Muslim mystic movements; nature and significance of Bhakti saints. Maharashtra Dharma, role of the Vaisnave Revivakist Movement; Social and Religious Significance of the Chaitanya Movement, impact of Hindu Society on Muslim Social Life.

13. The Vijaynagar Empire : its origin and growth; contribution to art, literature and culture, social and economic conditions; system of administration; breakup of the Vijaynagar Empire.

14. Sources of History : important Chronicles. Inscriptions and Travellers Accounts.

15. Establishment of Mughal Empire in Northern India : political and social conditions in Hindustan on the eve of the Babur's invasion; Babur and Humayun Establishment of the Portugese control in the Indian ocean, its political and economic consequences.

16. Sur Administration, political revenue and military administration.

1 . Expansion of the Mughal Empire under Akbar : political unification; new concept of monarchy under Akbar : Akbar's religio-political outlook; Relations with the non-Muslims.

18. Growth of regional languages and literature during the medieval period. Development of art and architecture.

19. Political ideas and institutions; Nature of the Mughal State, Land Revenue administration; The Mansabdari and the jagirdari, system, the land structure and the role of Zamindars, agrarian relations, the military organisation.

20. Aurangzeb's religious policy, expansion of the Mughal Empire in Deccan; Revolts against Aurangzeb-Character and consequences.

21. Growth of urban centres; industrial; economy-urban an rural : Foreign Trade and Commerce. The Mughals and the European trading companies.

22. Hindu Muslim relations; trends of integration; composite culture (16th to 18th centuries).

23. Rise of Shivaji : his conflict with the Mughals; administration of Shivaji expansion of the Maratha power under the Peshwas (1707-1761). Maratha political structure under the first three Peshwas, Chauth and Sardeshmukhi, Third Battle of Panipat, cause and effects; emergence of the Maratha confederacy, its structure and role.

24. Disintegration of the Mughal Empire, Emergence of the new Regional States.

MODERN INDIA
(1757-1947)

PAPER II

SECTION 'A'

1. Historical Forces and Factors which led to the British conquest of India with special reference to Bengal, Maharashtra and Sind; Resistance of Indian powers and causes of their failure.

2. Evolution of British Paramountcy over princely States.

3. Stages of colonialism and changes in Administrative structure and policies. Revenue, Judicial and Social and Educational and their linkages with British colonial interests.

4. British economic policies and their impact. Commercialisation of agriculture, Rural indebtedness, Growth of agricultural labour, Destruction of handicraft industries. Drain of Wealth, Growth of modern industry and rise of a capitalist class Activities of the Christian Missions.

5. Efforts at regeneration of Indian society-Socio-religious movements, Social, religious, political and economic ideas of the reformers and their vision of future; nature and limitation of 19th Century "Renaissance" caste movements in general with special reference to South India and Maharashtra; tribal revolts, specially in Central and Eastern India.

6 Civil rebellions, Revolt of 1857, Civil Rebellions and peasants Revolts with special reference to Indigo revolt, Deccan riots and Mapplia Uprissing.

7. Rise and growth of Indian Natianal Movement. Social basis of Indian nationalism policies, Programme of the early nationalists and militant notionalists, militant revolutionary group terrorists. Rise and Growth of communalism. Emergence of Gandhiji in Indian politics and his techniques of mass mobilisation: Non-Cooperation, Civil Disobdience and Quit Indian Movement ; Trade Union and peasate movements State (s) people movements Rise and Growth of Left-Wing within the Congress-The Congress Socialists and communists; British official respones to National Movement Attitude of the congress to Contitutional changes 1909-1935. Indian National Army Naval mutiny of 1946. The partition of India and Achievement of Freedom.

WORLD HISTORY
(1500-1950)

SECTION B

A. Geographical Discoveries decline of feudalism, Beginning of Captalism. Renaissance and reformation in Europe.
The New absolute monarchies-Emergence of the Nation State.
Commercial Revolution in Western Europe-Mercantilism.
Growth of Parliamentary institutions in England. The Thirty Years' War. Its significance in European History ascendancy of France.

B. The emergence of a scientific view of the world. The age of Enlightenment.
The American revolution-its significance.
The French revolution and Napoleonic Era (1789-1815).

Socialist and Labour Movements in Europe.

C. Consolidation of Large Nation States. The Unification of Italy. The founding of the German Empire.

The American Civil War.

Colonialism and imperialism in Asia and Africa in the 19th and 20th centuries,

China and the Western Powers.

Modernisation of Japan and its emergence as a great power.

The European Powers and the Ottaman Empire (1815-1914)

The first World War-The Economic and Social impact of the War-The Peace of Paris 1919-

D. The Russian Revolution, 1917-economic and Social Reconstruction in Soviet-Union.

Rise of Nationalist Movements in Indonesia, China and Indo-China.

Rise and establishment of Communism in China.

Awakening in the Arab World Struggle for freedom and reform in Egypt-Emergence of Modern Turkey under Kamalatatürk. The Rise of Arab nationalism.

World Depression of 1929-32.

The new Deal of Franklin D.Roosevelt. Totalitarianism in Europe-Fascism in Italy, Nazism in Germany.

Rise of Militarism in Japan.

Origins and impact of Second World War.

HOME SCIENCE

PAPER I

A. Meaning, importance and processes of Home Management.

B. Resources - Human and Non-Human.

(i) Time

(a) Time as resource
(b) Time Plans
(c) Time demands during different stages of family life.

(ii) Energy

(a) Energy as a resource
(b) Energy demands during different stages of family life.
(c) Fatigue-Physiological and Psychological.

(iii) Money as a resource
(a) Sources of income
(b) Types of income
(c) Methods of handling family income
(d) Budgeting - Types, preparation, Account keeping, savings and investments.

(iv) Objectives and principles of work simplification.

C. Consumer Economics :

(a) Consumer goods-classification, brands, advertisements.
(b) Consumer-Protection-Quality control and Labelling.

D. Home Furnishing and Interior decoration.

(a) Objectives and principles of home furnishing.
(b) Flower arrangement, principles and types.
(c) Accessories.

II CLOTHING AND TEXTILES.

A. i) A study and classification of textile fibres.

ii) Properties of :—

(a) Cellulose fibres
(b) Protein fibres
(c) Thermoplastic fibres
(d) Mineral fibres

B. Yarn :

i) Yarn making, different types of yarns.
ii) Fabric construction.

(a) Weaving, different kinds of weaves-Plain, Twill, Datin Dateen, pile, jacquard.
(b) Court of cloth
(c) Knitting.

C. Finishes.

1) Objectives of Finishes.
2) Kinds of Finishes.

D. Dyeing and printing of textiles.

1) Study of different indigenous and chemical dyes.
2) Printing-Block, screen, discharge, Resist.

E. Dry cleaning—Use of absorbents and solvents.

F. Clothing.

1) Importance of clothing.
2) Sociological and psychological aspects of clothing.
3) Clothing in relation to family budget.

HOME SCIENCE
PAPER—II

1. Foods and nutrition :

A. Review of Essential nutrients, their food sources, requirements and deficiency diseases.

1) Carbohydrates
2) Proteins
3) Fats
4) Vitamins
5) Minerals

B. Balanced diet :

1) Definition
2) Factors to be considered while planning a balanced diet.

C. Malnutrition, and optimum Nutrition :

1) Definition
2) Protein Calorie Malnutrition
3) Kwashiorkar
4) Marasmus
5) Obesity

D. Diet Theraphy :

1) Principles of therapeutic diets
2) Types of therapeutic diets – Liquid, Semisolid, and low sodium diet.
3) Diets in diseases–peptic ulcer, Diabetic mellitus, Hypertension, Anaemia.

E. Food Preservation :

1) Importance and principles of food preservation.
2) Different methods of food preservation – drying, smooking dehydration, refrigeration pasteurization, canning.

2. CHILD DEVELOPMENT :

A. Meaning and principles of child development.

B. Growth and Development.

1) Introduction
2) Factors affecting growth and development
3) Types of growth and development
a) Physical
b) Social
c) Emotional
d) Language
e) Mental

C. Stages of development and characteristics of teach stages :

1) Infancy
2) Pre-School
3) Childhood
4) Adolescence

D. Prenatal care and development

a) Diognosis, signs and symtoms of Pregnancy
b) Physical and psychological care of the mother
c) Stages of prenatal growth and Development.

d) Post natal care of mother
e) Care of new born baby.

E. Breast feeding and bottle feeding.

1) Advantages and dis-advantages of each
2) Weaning.

F. Child Psychology :

Definition, Meaning and scope.

LAW

PAPER I

I. CONSTITUTIONAL LAW OF INDIA :

1. Nature of the Indian constitution : The distinctive features its federal character.

2. Foundational Rights : Directive Principles and their relationship with Fundamental Rights ; Fundamental Duties.

3. Right to Equality.
4. Right to Freedom of Speech and Expression
5. Right to Life and Personal Liberty.
6. Religions, Cultural and Educational Rights.
7. Constitutional position of the President and relationship with Council of Ministers.
8. Governor and his powers.
9. Supreme Court and High Courts, their power and jurisdiction.
10. Union Public Service Commission and State Public Service Commission : their powers and Functions.
11. Principles of Natural Justice.
12. Distribution of Legislative powers between the Union and the States.
13. Delegated legislation : its constitutionality, judicial and legislative controls.
14. Administrative and Financial Relations between the Union and the State.
15. Trade Commerce and Intercourse in India.
16. Emergency provisions.
17. Constitutional safeguards to Civil Servants.
18. Parliamentary previlages and immunities.
19. Amendment of the Constitution.

II. INTERNATIONAL LAW.

1. Nature of International Law.
2. Source : Treaty Custom, General Principles of Law recognised by civilized nations, subsidiary means for the determination of law Resolution of International organs and regulations of Specialized Agencies.
3. Relationship between International Law and Municipal Law.
4. State Recognition and State Succession.
5. Territory of State : modes of acquisition, boundaries, International Rivers.

6. Sea : Inland Waters, Territorial Sea, Contiguons Zone, Continental Shelf, Exclusive Economic Zone and ocean beyond national jurisdiction.

7. Air-space and aerial navigation.

8. Outer-Space : Exploration and use of Outer space.

9. Individuals, nationality, Statelesness : Human Rights and procedures available, for their enforcement,

10. Jurisdiction of State : bases of jurisdiction, immunity from jurisdiction.

11. Extradiction and Asylum.

12. Diplomatic Missions and Consular Posts.

13. Treaties : Formation, application and termination.

14. State responsibility.

15. United Nations : its principal organs, powers and functions.

16. Peaceful settlement of disputes.

17. Lawful recource to force ; aggression, self-defence, intervention.

18. Legality of the use of nuclear weapons : ban on testing of nuclear weapons ; Nuclear Non-Proliferation Treaty.

PAPER II.

1. LAW OF CRIMES AND TORTS :

LAW OF CRIMES

1. Concept of Crimes ; actus reus means rea in statutory offences, punishments, mandatory sentences, preparation and attempt.

2. Indian Penal Code :

a) Application of the Code
b) General exceptions
c) Joint and constructive liability
d) Abetment.
e) Criminal conspiracy
f) Offences against the State
g) Offences against Public tranquility
h) Offences by or relating to public servants
i) Offences against human body
j) Offences against property
k) Offences relating to marriage : Cruelty by husband or his relatives to wife.
l) Defamation.

3. Protection of Civil Rights Act, 1955

4. Dowry Prohibition Act, 1961

5. Prevention of Food Adulteration Act, 1954

LAWS OF TORTS

1. Nature of tortious liability
2. Liability based upon fault and strict liability
3. Statutory liability
4. Vicarious liability
5. Joint Tort-feasors
6. Remedies
7. Negligence
8. Occupier's liability and liability in respect of structures
9. Detinue and conversion
10. Defamation
11. Nuisance
12. Conspiracy
13. False imprisonment and malicious prosecution.

II. LAW OF CONTRACTS AND MERCHANTILE LAW.

1. Formation of contract
2. Factors vitiating consent
3. Void, voidable, illegal and unenforceable agreements
4. Performance of contracts
5. Dissolution of contractual obligations frustration of contracts
6. Quasi-Contracts
7. Remedies for breach of contract
8. Sale of goods and hire purchase
9. Agency
10. Formation and dissolution of Partnership
11. Negotiable Instruments
12. The Banker-Customer relationship
13. Government control over private Companies.
14. The Monopolies and Restrictive Trade Practices Act, 1969
15. The Consumer Protection Act, 1986.

MIZO ELECTIVE PAPER - I

1. Mizo Elective Paper I Part A Poetry carries 60 marks. This will be a brief introduction to the critical study of Mizo poetry from Pre-British period to the present day.

2. The second part of this paper will be part B-Drama and carries 40 marks. There are two dramas one of which is Mizo origin and the other one is translation. This part of the paper requires the students to learn characteristics of drama with special reference to the two dramas.

MIZO ELECTIVE PAPER—II

The second paper namely, A–Prose and B–Fiction will be critical study of Prose and Fiction of Mizo origin.

MIZO ELECTIVE PAPER–I

PAPER – I 100 marks
A – Poetry 60 marks
B – Drama 40 marks

POETRY

(a) Kum 1900 hmalam hlate

1) Salulam Zai – chang 5
2) Chawngchen Zai – chang 5
3) Chai hla – chang 5
4) Laltheri Zai – chang 5
5) Saikuti Zai – chang 5
6) Hrangchhawni Zai – chang 5
7) Awithangpa Zai – chang 5

(b) Kum 1900–1920 chhung hlate

1) Tlangthim chhak lam kei ka en ang – Zosaphluia (D.E. Jones)
2) Thlalera ka vahvaih chhung hian – Liangkhaia
3) Ka lungchhia hi mi man pek kha hriain – Zosapthara (E.Rowlands)

(c) Kum 1920-1940 chhung hlate

1) Pialral ka ngai – chang 5
2) Lei Lal puan ropui – C.Z. Huala
3) Tlang a dang lung a leng – Saihnuna

(d) Kum 1940–1965 chhung hlate

1) Ramthar Zai – chang 5
2) Chunnu lungmawl, ka di parte – (Kaihlek hla)
3) Hmangaihna – Vankhama
4) Lengdun ila – Lalzuithanga
5) Vanhnuai khuavel sakhming chhiarin – Rokunga

(e) Kum 1965 hnulam hlate

1) Kan hun tawng zingah – Suakliana
2) Ka pianna zawlkhawpui – Rokunga
3) Ramngaih hla – F.Rokima
4) Tho la, ding ta che – V.Thangzama

B. DRAMA/LEMCHAN

1) Liandova te Unau - Lalthangfala Sailo
2) Doctor Faustus - Christopher Marlowe
- Lettu : C.Laltlankima

TEXT BOOK :

1) Rimawi Ram (Compiled & edited by Lalthangfala Sailo for CTBEB)
2) Doctor Faustus - Lettu - C.Laltlankima
3) Liandova te Unau - Lalthangfala Sailo.

MIZO ELECTIVE PAPER II

PAPER II 100 marks
A - Prose 60 marks
B - Fiction 40 marks

A. PROSE/THU

1) Thlirtu - Kaphleia
2) Zofaten kawng kan bove - Zikpuii Pa
3) Harsatna - J.Malsawma
4) Rihdil leh Mizoram - Siamkima Khawlhring
5) Huaisen - Darchhawna
6) Khuailui ral - Lalzuia Colney
7) Mizo tlawmngaihna a sir lehlam - Sangzuala Pa

B. FICTION/THAWNTHU PHUAH

1) Sialton Official - C.Thuamluaia
2) Phira leh Ngurthanpari - Lalzuithanga
3) Pangpar Bawm (Lehlin) - Rokhuma Rev.

MATHEMATICS

PAPER : I

Any five questions may be attempt out of 12 questions to be set in the paper.

LINEAR ALGEBRA.

Vector space, bases, dimension of a finitely generated space, Linear transformations, Rank and nulity of linear transformation, Cayley Hamilton theorem, Eigenvalues and Eigenvectors.

Matrix of a linear transformation. Row and Column reduction. Echelon form. Equivalence, Congruence and similanty. Reduction to ecanomical forms.

Orthogonal. symmetrical, skew-symmetrical, unitary, Hermitian and skew-Hermitian matrices-their eigen-values, orthogonal and unitary reduction of quadratic and Hermitian forms. Positive definite quadratic forms. Simultaneous reduction.

Calculas.

Realnumbers, limits, continuity, differentiability. Mean-value theorem, Tajlor's theorem, indeterminate forms, maxima and Minima. Curve Tracing.

Asymptotes.

Functions of several variable, partial derivatives, maxima and minima Jacobian, Definite and indefinite integrals, Double and triple integrals (techniques only) Application to Beta and Gamma Functions.

Areas, Volumes, centre of gravity.

Analytic Geometry of two and three dimensions. First and second degree equations in two dimensions in cartesian and pollar coordinates. Plane, sphere paraboloid, Ellipsoid, hyperboloid of one and two sheets and their elementary properties. Curves in space, curvature and corsion, Frenot's formulae.

Differential Equations.

Order and Degree of different equation; differential equation of first order and first degree. Variables separate. Homogeneous, Linear and exact differential equations. Differential equations with constant co-efficient. The complementary function and the particular intergral of –

ax.	ax,	ax,	m,	ax,	Bx,	ax,	Bx
e,	cos,	sin,	x,	e,	cos,	e,	sin

vector, Tensor, Statics Dynamics and Hydrostatics.

(i) Vector Analysis – Vector Algebra, Defferentiation of vector function of a scalar variable, Gradient, divergence and curl in cartesiom, cylindrical and spherical coordinates and their physical interpretation, Higher order derivatives. Vector identities and Vector identities and Vector equations, Gauss and Strokes Theorems.

(ii) Tensor Analysis – Definition of a Tensor, Transformation of co-ordinates, contravariant and covariant tensors. Addition and multiplication of tensors, contraction of tensors. Inner product, fundamental tensor christoffel symbols covariant differential curl and divemence in tensor notation.

(iii) Statics-Equilibrium of a system of particles; work and potential energy, Friction, Common Catenary, Principle of Virtual work. Stability of equilibrium. Equilibrium of forces in three dimensions.

(iv) Dynamics - Degree of freedom and constraints. Rectilinear motion, Simple harmonic motion. Motion in a plane. Prohecttiles, Constrained motion. Work and energy. Motion under impulsive forces. Kepler's laws. Orbits under central forces motion of varying mass. Motion under resistance.

(v) Hydrostatics - Pressure of heavy fluide, Equilibrium of fluids under given systems of forces. Centre of Pressure. Thrust of curved surfaces. Equilibrium of floating bodies. Stability of equilibrium and Pressure of gases, problems relating to atmosphere.

PAPER - II

This paper will be in two sections. Each section will contain eight questions. Candidates will have to answer any five questions.

SECTION A.

Algebra, Real Analysis, Complex Analysis, Partial Differential equations.

SECTION B.

Mechanics, Hydrodynamics, Numerical Analysis, Statistics including probability operation Research.

ALGEBRA

Groups, sub-groups, normal sub-groups, homomorphism, of groups quotient groups. Basic isomorphism. Slow theorems, Permutation Groups, Cayley's thereorem. Rings and Ideals, Principal Ideal domains, unique factorizations and Euclidean domains. Field Extentions. Finite fields.

REAL ANALYSIS

Metric spaces, their topology with special reference to sequence in a metric space, Cauchy sequence, Completeness. Completion, Continuous functions. Uniforms.

Properties of continuous functions on Compact sets. Riemann Steilities Integral, Improper integrals and their conditions of existence. Differentiation of functions of several variables. Implicit function theorem, maxima and minima, Absolute and conditional Convergence of series of real and Complex terms, Re-arrangement of series, Uniform convergence, infinite products, Continuity, differentiability and integrability for series, Multiple integrals.

COMPLEX ANALYSIS

Analytic functions, Cauchy's theorem, Cauchy's integral formula, power series, Tailor's series, singularities, Cauchy's Residue theorem and Contour integration.

PARTIAL DIFFERENTIAL EQUATIONS

Formation of partial defferential equations, Types of integrals of partial differential equations of first order, Charbits method, partial differential equation with constant, co-efficients.

MECHANICS

Generalised Coordinates, Constraints holonomic and non-holonomic systems. D' Alembert's principle and Languages' equations. Moment of Inertia, Motion of rigid bodies in two dimension.

HYDRODYNAMICS

Equation of continuity, momentum and energy. Inviscid Flow Theory :- Two dimensional motion, Streaming motion, Sources and Sinks.

NUME ICAL ANALYSIS

Transcendental and Polynomial Equations, Methods of tabulation, bisection requlataisi, secants and Newton-Rapnson and order of its convergence.

INTERPOLATION AND NUMERICAL DIFFERENTIATION :-

Polynomialinterpolation with equal or unequal step size. Spline interpolation Cubic Splins. Numerical differentiation formulae with error terms.

NUMERICAL INTEGRATION :- Problems of approximate quadrative, quadrature formulae with equispaced arguments, coussion quadrature Convergence.

ORDINARY DIFFERENTIAL EQUATIONS :- Eular's method, multisteppredictore Corrector method—Adam's and Milne's method, convergence and stability, Runge Kutta Method's. Probability and statistics.

1. Statistical methods :- Concept of statistical population and random sample, Collection and presentation of data. Measure of location and presentation of data/Moment and shephard's corrections.

Comulants Measures of Skewness and Kurtosis

Curve fitting by least squares Regression, correlation and correlation ratio, Rank correlation. Partial correlation Co-efficient and Multiple correlation co-efficient.

2. Probability :- Discrete sample space, Events, their union and inter-section etc. Probability Classical relative frequency and axiomatic approaches, Probability in continum, probability space, Conditional probability and independence. Basic laws of Probability, Probability of combination of events, Bayes, theorem, Random variable Probability function, Probability density function. Distribution function. Mathematical expectation. Marginal and conditional expectation.

3. Probability distributions :– Binomial, Poisson, Normal, a,. a. Beta, Cauchy, Multinomial, Hypergeometric, Negative Binomial, Chebychev's lemma, (weak) law of large numbers, Central limit theorem for independent and identical varieties. Standard errors, Sampling distribution of I,F and Chi-square and their uses in tests of significance. Large sample, tests for mean and proportion.

OPERATIONAL RESEARCH

Mathematical Programming :— Definition and some elementary properties of convex sets, simplex methods, degeneracy, quality and sensitivity analysis, rectangular games and their solutions, Transportation and assignment problems, Kuha Tucker condition for non. linear programming. Bell Manis optimality principle and some elementary applications of dynamic programming.

Theory of Queues :— Analysis of steady state and transtient solutions for queueing system with Poisson arrivals and exponential service time.

Deterministic replacement models, Sequencing problems with two machines, n jobs 3 machines, n jobs (Special case) and n machines 2 jobs.

POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

PAPER I

SECTION A

POLITICAL THEORY

1. Main features of ancient Indian Political thought ; Manu and Kautilya ; Ancient Greek thought, Plato, Aristotle ; General characteristics of European Mediaval political thought. St. Thomas Aquinas, Marsiglio of Padua ; Machavelli ; Mohbes, Locke, Montesquieu, Rousseau, Bentham, J. S. Mill, T. H. Green, Hegel, Marx, Lenin, and Mao-tse-Tung.

2. Nature and scope of Political Science : Growth of political Science as a discipline Traditional vs. contemporary approaches ; Behaviourism and post behavioural developments ; Systems theory and other recent approaches to political analysis, Marxist approach to political analysis.

3. The emergence and nature of the modern State : Sovereignty ; Monistic and Pluralistic analysis of Sovereignty : Power Authority and Legitimacy.

4. Political obligation : Resistance and Revolution ; Rights, Liberty, Equality, Justice.

5. Theory of Democracy.

6. Liberalism, Evolutionary Socialism (Democratic and Fabin): Marxian Socialism ; Fascism.

SECTION B

GOVERNMENT AND POLITICS WITH SPECIAL REFERENCE TO INDIA

1. Approaches to the study of Comparative Politics : Traditional Structural Functional approach.

2. Political Institution : The Legislature, Executive and Judiciary :

Parties and Pressure-Groups; Theories of Party System; Lenin, Micheis and Duverger; Electoral System; Bureaucracy Weber's view and modern critiques of Weber.

3. Political Process: Political Socialization, modernisation and Communication; the nature of the non-western political process; A general study of the constitutional and political problems affecting Afro-Asian Societies.

4. Indian Political System : (a) The Roots; Colonialism and nationalism in India; A general study of modern Indian social and political thought; Raja Rammohan Roy, Dadabhai Naurojy, Gokhale, Tilak, Sri Aurobindo, Igbal, Junnha, Gandhi, D.R, Ambedkar, M.N.Roy and Nehru.

(b) The sructure: Indian constituuion, Fundamental Rights and Directive Principles; Union Government; Parliament; Cabinet, Supreme Court and Judicial Review, Indian Federalism Centre State relations; State Covernment, Role of the Governor, Panchayati Raj.

(c) The functioning - Class and Caste in Indian Politics, politics of regionalism, linguism and communalism, Problems of secularization of the policy and national integration Political, elites, the changing compositon; Political parties and political participation; Planning and Developmental Administration; Socio economic changes and its impaction Indian democracy.

PAPER II

PART I

1. The nature and functioning of the Sovereignation state system.

2. Concepts of International Politics; Power, National interest; Balance of Power, "Power Vocuum".

3. Theories of International Politics; The Realist theory; Systems theory Decision making.

4. Determinants of foreign policy : National Interest; Ideology; Elements of National Power (including nature of domestic socio-political institution).

5. Foreign Policy Choices- Imperialism; Balance of Power; Allegiances; Isolationalism; Nationalistic; Universalistism; (Pax Britannica; Pax Americana Pax Sovietica): The "Middle Kingdom" complex of China; Non-alignment.

6. The Cold War : Origin, evaluation and its impact on international relations: Defence and its impact; a new Cold War ?

7. Non-alignment : Meaning, Bases (National and international) the non-aligned Movement and its role in international relations.

8. De-colonization and expansion of the international community; Neo-colonialism and racialism their impact on international relations : Asian-African resurgence.

9. The present International economic order Aid, trade and economic development; the struggle for the New International Economic Order; Sovereignty over natural resources; the crisi in energy resources.

10. The Role and International law in International relations; The international court of justice.

11. Origin and Development of International, Organizations : The United Nations and Specialized Agencies; their roles in international relations.

12. Regional Organisation : QAS, OAU, the Arab Leaque, the ASEAN, the EEC their role in international relations.

13. Arms race disarmament and arms control; Conventional and nuclear arms the Arms Trade; its impact on Third world role in international relations.

14. Diplomatic theory and practice.

15. External intervention : ideological, political and economic, "Culture imperialism" Covert intervention by the major powers.

PART II

1. The uses and mis-uses of nuclear energy; the impact of nuclear weapons in international relations; the Partial Test-ban Treaty; the Nuclear Non-Proliferations.

2. The problems and prospects of the Indian Ocean being made a peace zone.

3. The conflict situation in West Asia.

4. Conflict and co-operation in South Asia.

5. The (Post War) foreign policies of the major powers; United States, Soviet Union, China.

6. The Third World in international relations : the North-South "Dialogue in the United Nations and Outside.

7. The India's foreign policy and relations; India and the Super Powers; India and its neighbour; India and South-east-Asia; Indian and African problems; India's economic diplomacy, India and the question of nuclear weapons.

PHILOSOPHY

PAPER I

Metaphysics and Epistemology.

Candidates will be expected to be familiar with theories and types of Epicstemology and Metaphysics-Indian and Western-with special reference to the following :

(a) Western-Idealism, Realism, Absolutism. Empiricism, Rationalism, Logical 'I' Positivism, Analysis; Phenomenology; Existentialism; and Pragmatism.

(b) Indian-Paramans and Paramanys; Theories of truth and error; Philosophy of Language of meaning; Theories of reality with reference to main system (Orthodox and Heterodox) of Philosophy.

PAPER II

Socio-Political Philosophy and Philosophy of Religion.

1. Nature of Philosophy; its relation to life, thought and cultur,

2. The following topics with special reference to the Indian context including Indian Constitution :—

Political Ideologies : Democracy, Socialism.

Fascism, Theocracy, Communism and Sarvodaya.

Methods of Political Action: Constitutionalism, Revolution. Terrorism and Satyagraha.

3. Traditional, change and Modernity with reference to Indian Social Institutions.

4. Philosophy of Religious language and meaning.

5. Nature and scope of Philosophy of religion. Philosophy of Religion, with special reference to Buddhism, Jainism, Hinduism, Islam, Christianity aud Sikhism.

   (a) Theology and Philosophy of Religion.

   (b) Foundation of religious belief Reason Revealation Faith and Mysticism.

   (c) God, Immorality of soul, Liberation and Problem and Evil and Sin.

   (d) Equality: Unity and Universality of Religious; Religions tolerance; Conversion Secularism.

6. Moksha-Paths ing to Moksha.

PHYSICS

PAPER – I

MECHANICS, THERMAL PHYSICS AND WAVES AND OSCILLATIONS

1. MECHANICS :

Conservation Laws Collision impact parameter, Scattering cross-Section, centre of mass and lab systems with transformation of physical quantities. Rutherford Scattering. Motion of a rocket under constant force, field. Rotating frames of reference, Coriolis force. Motion of rigid bodies. Angular momentum, Torgue and Procession of a top. Cyroscope. Central forces Motion under inverse square law, Kepler's laws, Motion of Satellites (including geostationary). Galilean Relativity, Special Theory of Relativity, Michelson-Morley Experiment, Lorrents Transformations addition theorem of velocities. Variation of mass with Velocity. Ass-energy equivalence. Fluid dynamics, streamlines, turbulence, Bernoulli's Equation with simple applications.

2. THERMAL PHYSICS :

Laws of Thermadynamics. Entrophy, Carnot's cycle. Isothermal and adiabatic Changes. Thermadynamics Potentials, Maxwell's relations the Clausius-Clapeyron equation, reversible cell, Joule-Kelvin effect, Stefen-Boltzmann Law. Kinetic Theory of Gases. Maxwell's Distribution Law of Velocities, Equipartition of energy, Specific heat of gases mean Free Path,Brownian Motion. Black Body radiation specific heat of solides-Einstein & Deoye theories, Wein's Law Planck's Law, Solar Constant. Thermalionization and Steller spectra. Production of Law, temperatures using adiabtic demagnatization and dilution refrigeration, concept of negative temperature.

3. WAVES AND OSCILLATIONS :

Oscillations; Simple harmonic motion, stationery and travelling waves, Damped harmonic motion, Forced Oscillation & Resonance. Wave equation, Harmonic Solutions, Plane and Sperical waves, superposition of waves. Phase and Group velocities, Beats; Huygents principle, Insterference. Diffraction Fresnel & Fraunhofer Diffraction by streight edge, Single and Multiple slits. Resolving power of grating and Optical Instruments. Buyleigh Criterion, Polarization, Production and Detection of polarized light (linear, circular, and elliptical). Leser sources (Helium-Neon, Ruby and semiconductor diode), Concepts of spatial and temporal coherence. Diffraction as a Fourier Transformation. Fresnel and Fraunhofer diffractioη by rectangular and circular spertures, Holo-graphy; theory and applications.

PAPER II

ELECTRICITY & MAGNETISM MODERN PHYSICS AND ELECTRONICS

1. ELECTRICITY & MAGNETISM :

Coulomb's law Electric field, Gause's law, Electric–potential, Poison and Laplace equations for a homogeneous dietectric, uncharged conducting sphere in a

uniform field, Point charge and infinite conducting Plane. Magnetic shell. Magnetic induction and field strength. Biot-Savart law and application. Electro-magnetic induction, Faraday's and Lenz's laws, Self and mutual inductances. Alternating currents. LCR circuits, series and parallel resonance circuits, quality factor, Kirchoff' laws with applications, Marwell's equations and electromagnetic waves. Transverse nature of electromganetic waves. Pointing vector. Magnetic field in matter-dia, para, ferro, antiferro and ferri magnetism (qualitative approach only.)

2. MODERN PHYSICS :

Bohl's theory of hydrogen atom. Electron spin. Optical and X-Ray Spectra, Stern-Gerlach experiment and spatial quantization-Vector model of the atom, spectral terms, fine structure of spectral lines. J-J and L-S coupling, Zeeman effect, Pauli's exclusion principle, spectral terms of two equivalent and non-equivalent electrons. Gross and fine structure of electronic band Spectra. Raman effect. Photoelectric effect. Compton effect. Debrogile waves, Wave-Particle quality and uncertainty principle. Schrodinger wave equation with application to (i) particle in a box, (ii) motion across a step potential One dismensional harmonicoscillator, Eigen values and Eigen functions. Urcertainty Principle Radioactivity. Alpha, beta and gamma radiations. Elementary theory of the alpha decay. Nuclear binding energy. Mass spectroscopy. Semi empirical mass formula. Nuclear fission and fussion. Reaction physics elementary particles and their classification. Strong and weak Electromagnetic interactions. Particle accelerator; cycotron, Lenior accelerators, Elementary ideas of Super-conductivity.

3. ELECTRONICS :

Band theory of solides-conductors, insulators and semiconductors, Intrinsic and ex-intrinsic semiconductors. P-N junction, Thermistor zenner diodes reverse and forward biased P-N Junction solar cell.

Use of diodes and transistors for rectification, amplification oscillation, modulation and detection of r.f. waves. Transistor receivers, Television, Logic Cates.

PSYCHOLOGY

PAPER I

FOUNDATION ON PSYCHOLOGY

1. THE SCOPE OF PSYCHOLOGY:

Place of Psychology in the family of social and behavioural Sciences.

2. Methods of psychology .

Methodological problems of psychology. General design of psychological research. Types of psychological research. The characteristic of psychological measurement.

3. The nature, origin and development of human behaviour :

Heredity and environment. Cultural factors and behaviour. The process of socialisation. Concept of National Character.

4. Cognitive Processes :

Perception, Theories of perception. Perception organisation. Person-perception, perceptual defence. Transactional approach to perception. Perception and personality, Figural alter-effect, Perception styles. Perceptual abnormalities, Vigilance.

5. Learning :

Cognitive, Operant and Clasical conditioning approaches. Learning phenomena, Extinction. Desormination and generalisation. Discrimination learning. Probability learning, Programmed learning.

6. Remembering :

Theories of remembering. Short-term memory. Long-term memory. Measurement of memor . Forgetting Reminiscence.

7. Thinking :

Problem solving concept formation. Strategies of concept formation. Information processing. Creative thinking. Convergent and Divergent thinking. Development of thinking of children theories.

8. Intelligence :

Nature of intelligence. Theories of intelligence. Measurement of intelligence. Measurement of creatavity. Aptitude Measurement of aptitudes. The concept of social intelligence.

9. Motivation :

Characteristic of motivated behaviour. Approaches to motivation. Psychoanalitic theory. Drive Theory : Need hierarchy theory. Vector valence approach. Concept of level of aspiration. Measurement of motivation. The apathetic and the alienated individual. Incentives.

10. Personality :

The concept of personality. Trait and type approaches. Factorial and dimensional approaches, Theories of personality : Freud, Allport, Murray, Cattell. Social learning theories and Field Theory. The Indian approach to personality ; the concept of Gunas. Measurement of personality ; Questionares ; Rating Scales ; Psychometric Tests ; Protective Tests ; Observation method.

11. Language and Communication :

Psychological basis of language. Theories of language Development. Skinner and Chomsky. Non-verbal communication; Body language. Effective communication. Source and receiver characteristics. Persuasive communications.

12. Attitudes and Values :

Structure of attitude. Formation of Attitudes. Theories of attitude. Attitudes measurement Types of attitude scales. Theories of attitude change values. Types of values. Motivational properties of values. Measurement of values.

13. Recent Trends :

Psychology and the Computer. Cybernetic model of behaviour. Simulation studies in psychology. Study of consciousness. Altered states of consciousness : Sleep, dream meditation and hyphotic trance : drug induced changes. Sensory deprivation. Human problems in aviation and space flight.

14. Models of man. The Mechanical Man. The Organic Man. The Organisational man. The Humanistic Man. Implications of the different models for behaviour changes. An integrated model.

PAPER II

PSYCHOLOGY : ISSUES AND APPLICATIONS.

1. Individual differences.

Measurement of individual differences. Type of psychological tests. Construction of psychological tests. Characteristic of a good psychological tests. Limitations of psychological tests.

2. Psychological Disorders.

Classifications of Disorders and nosological systems. Neurotic, Psychotic and psychophysiologic disorders, Psychopathic personality. Theories of psychological disorders. The problems of anxiety, depression and stress.

3. Therapeutic Approaches.

Psychodynamic approach. Behaviour therapy. Client-centered therapy. Cognitive therapy. Group therapy.

4. Applications of psychology to Organisational industrial problems.

Personnel selection Training. Work Motivation. Theories of work motivation. Job desigaing. Leadership training. Participatory management.

5. Small Groups.

The concept of small group. Properties of groups, Groups at work. Theories of group behaviour, Measurement of group behaviour, Interaction process analysis. Inter-personal relations.

6. Social change.

Characteristics of social change. Psychological basis of change. Steps in the change process. Resistance to change. Factors contributing to resistance. Planning of change. The concept of change proneness.

7. Psychology and the Learning process.

The Learner. School as an agent of socialisation. Problems relating to adolescents learning situations. Gifted and retarded children and problems related to their training.

8. Disadvantage Groups.

Types : Social, cultural and economic, psychological consequences of disadvantages. Concept of deprivation. Educating the disadvantaged groups. problems of motivating the disadvantaged groups.

9. Psychology and the problems of social integration. The problem of ethnic of prejudice. Nature and prejudice. Manifestation of prejudice. Development of prejudice. Measurement of prejudice. Amedioration of prejudice. Prejudice and personality. Step to achieve social integration.

10. Psychology and Economic Development. The nature of achievement motivation. Motivating people for achievement. Promotion of intre-preneurship. The Entrepreneurship Syndrome. Technological change and its impact on human behaviour.

11. Management of Information and Communication, psychological factors in Information Management. Information overload. Psychological basis of effective Communication- Mass Media and their role in Social change, Impact of Television. Psychological basis of effective advertising.

12. Problems of Contemporary Society. Stress, Management Stress. Alcoholism and Drug Addiction. The Socially Deviant. Juvenile delinquency. Crime Rehabilitation of the deviant. The problem of the aged.

PUBLIC ADMINISTRATION

PAPER I

ADMINISTRATIVE THEORY

1. Basic Premises :

Meaning, scope and Significance of Public Administration; Private and Public Administration, its role in Developed and Develping societies; ecology of Administration, Social, Economic, Cultural, Political and legal ; Evolution of Public Administration as art and a Science; New Public Administration.

2. Theories of Organisation – Scientific management (Taylor and his Associates) The Bureaucra theory of Organisation (Weber); Classical Theory of Organisations (Henri Fayol, Luther Gulic and others); The Human Relations Theory of Organisations (Elton Mayo and his colleagues) Behavioural Approach. Systems Approach, Organisational Effectiveness.

3. Principles of Organization – Hierarchy, Unity of Command, Authority and Responsibility, Co-ordination, Span of Control, Supervision, Centralization and Decentralization, Delegation.

4. Administrative Behavior – Decision making with Special Reference to the contribution of Herbert Simon, Theories of Leadership; Communication; Morale; Motivation (Maslow and Herzberg).

5. Structure of Organisation – Chief Executive, Types of Chief Executive and their function; Line, Staff and Auxiliary agencies; Department; Corporations, Companies, Boards and Commissions. Headquarters and field relationship.

6. Personnel Administration – Bureaucracy and Civil Services; Position Classification; Recruitment; Training; Career Development; Performance Appraisal; Promotion; Pay and Service Condition; Retirement Benefits: Discipline; Employer–Employee Relations, Integrity in Administration, Generalists and Specialists Neutrality and Anonymity.

7. Financial Administration – Concept of Budget, Preparation and Execution of the Budget; Performance Budget; Legislative Control; Accounts and Audit.

8. Accountability and Control – The concepts of Accountability and Control; Legislative, Executive and Judicial Control over Administration, Citizen and Administration.

9. Administrative Reforms – O & M Work Study; Work Measurement; Administrative Reforms; Processes as and Obstacles.

10. Administrative Law – Importance of Administrative law, Delegated Legislation; Meaning, Types, Advantages, Limitations, Safeguards, Administrative Tribunals.

11. Comparative and Development Administration – Meaning, Nature and Scope of Comparative Public Administration, Contribution of Fred Riggs with particular reference to the Prismatic-Sale model, The concept, scope and significance of Development Administration. Political Economic and Social Culture context of Development Administration. The concept of Administrative Development.

12. Public Policy – Relevances of Policy Making in Public Administration. The process of Policy Formulation and Implementation.

PAPER II

INDIAN ADMINISTRATION

I. Evolution of Indian Administration—Kautilya; Mughal period; British period.

II. Environmental Setting—Contribution, Parliamentary, Democarcy, Federalism, Planning, Socialism.

IIL Political Executive at the Union Level–President, Prime Minister, Council of Ministers, Cabinet Committees.

IV. Structure of Central Administration—Secretariat, Cabinet Secretariat, Ministries and Departments, Boards and Commissions, Field Organisations.

V. Centre-State Relations—Legislative, Administrative, Planning and Financial.

VI. Public Services—All India Services, Central Services. State Services, Local Civil Services, Union and State Public Service Commissions, Training of Civil Services.

VII. Machinery for Planning—Plan Formulation at the National Level; National Development Council; Planning Commission; Planning Machinery at the State and District Levels.

VIII. Public Undertakings—Forms, Management, Control and Problems.

IX. Administration of Law and order role of Central and State agencies in maintenance of Law and order.

X. State Administration—Governor, Chief Ministers, Council of Ministers, Secretariat, Chief Secretary, Directorates.

XI. District and Local Administration—Role and Importance; District Collector; Land Revenue. Law and Order and Developn ent function. District Rural Development Agency Special Development Programmes.

XII. Local Administration—Panchayati Raj; Urban Local Government. Features, Forms, Problems, Autonomy of Local Bodies.

XIII. Administration for Welfare—Administration for the Welfare of Weaker Sections with Particular References to Scheduled Castes, Scheduled Tribes and Programmes for the Welfare of Women.

XIV. Issue of Areas in Indian Administration—Relationship between Political and Permanent Executives. Generalists and Specialists in Administration. Integrity in Administration. Peoples participation in administration Redressal of Citizens Grievances, Lok Pal and Lok Ayuktas, Administrative Reforms in India.

SOCIOLOGY

PAPER I

GENERAL SOCIOLOGY

Scientific study of social phenomena : The emergence of Sociology and its relationships with other disciplines, science and social behaviour the problem of objectivity, the scientific method and design of sociological research; techniques of data collection and measurement including participant and non-participant observation, interview schedule and questionaires and measurement of atitude.

Pioneering contributions of Sociology : The seminal ideas of Durkheim Weber, Red-Cliffe Brown, Malinowski, Persons, Merton and Marx historical materialism, alienation, class and class struggle Durkheim-division of labour, social fact, religion and society, Weber social action types of authority bureaucracy, rationality, protestant ethnic and the spirit of capitalism ideal types.

The individual society : Individual behaviour; social interaction, society and social group; social system, status and role; culture, personality and sosialization, conformity deviance and social control; role conflicts.

Social Stratification and mobility : Inequality and stratification, different conceptions of class, theories of stratification: caste and class; class and society; types of mobility; intergenerational mobility; open and closed models of mobility.

Family, marriage and kinship : Structure and functions of family : structural principles of kinship; family descent and kinship; change in society, change in age and sex roles and change in marriage and family; marriage and divorce.

Formal organisations : Elements of formal and informal structures bureaucracy; Modes of participation democratic and authoritarian forms: voluntary associations.

Economic System : property Concepts, Social dimensions of division of labour and types of exchange, social aspects of pre-industrial and industrial econmic system; industrialization and changes in the political, educational, religious, familiar and stratificational spheres, social determinants and consequences of economic development.

Political systems : The natuie of social power community power structure, power of the elite, class power, organization power, power of unorganised masses; power authority and legitimacy; power in democracy and in totalitarian society; political parties and voting.

Educational systems : Social origins and orientation of students and teachers, equality of educational opportunity, education as a medium of cultural reproduction, indoctrination, social stratification and mobility; education and modernisation.

Religions : The religious phenomenon; the sacred and the profane; social functions and disfunctions of religion; magic religion and science; changes in society and changes in religion secularization.

Social change and Development : Social structure and social change. continuity and change as fact and as value; process of change; theories of change; social disorganization and social movements; types of social movements; direct and social change, social policy and social Development.

PAPER II

SOCIETY OF INDIA

Historical moorings of the Indian Society : Traditional Hindu social organisation; socio-cultural dynamics through the ages; especially the impact of Buddhism, Islam and the modern West; factors in continuity and change.

Social Stratification : Caste System and its transformation aspects of ritual, economic and caste status. cultural and structural views about caste, mobility in caste, issue of equality and social justice, caste among the Hindus and the non-Hindus; casteism the Backward Classes and the Scheduled Caste, untouchability and its eradication; agrarian and industrial class structure Family marriage and kinship; Regional variation in Kinship; the Joint family-its stuctural and functional aspects and its changing form and disorganisation; marriage among different ethnic groups and economic categories, its changing trend and its future; impact of legislation and socio-economic change upon family and marriage, intergenerations gap and youth unrest; changing status of women.

Economic system : The Jajmani system and its bearing on the traditional society; market economy and its social consequences occupational diversification and social structure porfession trade unions; social determinants and consequences of economic development, economic inequalities, exploitation and corruption.

Political systems : The Functioning of the democratic political system in a traditional society; political parties and their social composition; social structural origins of political elites and their social orientations, decentralization of power and political participation.

Educational system : Education and society in the traditional and the modern contexts, educational inequality and change; education and social and mobility, educational problems of Women, the Backward Classes and the Schedule Castes.

Religion : Demographic dimensions, geographical distribution and neighbourhood living patterns of major religious categories; interreligious interaction and its manifestation in the problems of conversion. minority status and communalism, secularism.

Tribal societies and their integrations : Distinctive features of tribal communities, tribes and caste, acculturation and integration.

Rural social system and community development : Socio-cultural dimensions of the village community; traditional power structure, democratization and leadership; poverty, indebtedness and bonded labour; social consequences of land reforms, Community Development Programme and other planned development projects and of Green Revolution; New Strategies of rural development.

Urban social organisation : Continuity and change in the traditional cases of social organisation, namely, kinships, caste and religion in the urban contex, stratification and mobility in urban communities, ethnic diversity and community integration, urban neighbourhoods, rural-urban differences in demographic and socio-cultural characteristics and their social consequences.

Population dynamics : Socio-cultural aspects of sex and age structure, marital status, pertility and morality, the problem of population explosion, social, psychological, cultural, and econmic factors in the adoption of family planning practices.

Social change and modernization : Problems of Role conflict-Youth unrest-intergenerational gap changing St tus of Women, Major sources of social changes and Resistance to change, impact of West, reform movement, social movements, industrialization and urbanization pressure groups factors of planned change-Five-Year Plans legislative and executive measures, process of change-Sanskritization, westernization and modernization, means of modernization-mass media and education; problem of change and modernization - structural contradictions and breakdowns.

Current Social Evils : Corruption and Nepotism–Smuggling–Black Money.

ZOOLOGY

PAPER I

Non Chordata and Chordata, Ecology, Ethology, Biostatistics and Economic Zoology.

SECTION A

Non Chordata and Chordata.

1. A general survey, classification and relationship of the various phyla.

2. Protozoa : Study of the structure, bio–nomica and life history of Paramaecium, Monocyotis, malarial parasite, Trypanosoma and Leishmania–Locamotion, nutrition and reproduction in Protozoa.

3. PORIFERA : Canal system, skeleton and reproduction.

4. COELENTERATA : Structure and life history of Cliarand Aurelia, polymorphism in Hydrozoa, coral formation, metagenesis, phylogenetic relationship of Cinidaria and Acnidaria.

5. HELMINTHS : Structure and life history of Planaria, Fisciola, Taenia and Ascaries Paratic adaptation, Helminths in relation to man.

6. ANNELIDA : Neries, earthworm and leech; ceolom and metamerism; modes of life in polychactes.

7. ARTHROPODA : Palemon, Scorpion, cokroach, larval forms and parasitism in Crustacea, mouth part vision and respiration in arthropods social life and metamorphosis in insects. Importance of Peripatus.

8. MOLLUSCA : Unio Pila, oyster culture and pearl formation, cepbalopodes.

9. ECHINODERMATA : General organization, larval forms and affinities of Echinodermata.

10. General Organisation and characters, outline classiffication and inter-relationship of photochordata, Pisces, Amphibia, Reptilia Aves and mammalia.

11. Noteny and retrocressive metamorphosis.

12. A general study of comparative account of the various systems of vertebrates.

13. Locomotion, migration and respiration in fishes, structure and affinities of dipnoi.

14. Origin of Amphibia; distribution, anatomical peculiarities and affinities of Urodela and Apoda.

15. Origin of Reptiles; adaptive radiation in reptiles fossils reptiles; poisonous and snakes of India; poison apparatus of snakes.

16. Crigin of birds; flightless birds; arial adaptation and migration of birds.

17. Origin of mammals : homologies of earossicles in mammals ; dentition and skin derivatives in mammals ; distribution ; structural peculiarities and phylogenetic relations of Prototheria and Methatheria.

SECTION B.

Ecology, Ethology, Biostatistics and Economic Zoology.

Ecology :

1. Environment : Abiotic factors and their role, Biotic factors Inter and Inter-Specific relations.

2. Animal ; Organisation at population and community levels, ecological successions.

3. Ecosystem : concept, components, Fundamental operation, energy flow, biogeo-chemical, cycles, food chain and tropic levels.

4. Adaptation in fresh water, marine and terrestrial habitats.

5. Pollution in air, water and land.

6. Wild life in India and its conservation.

Ethology :

7. General survey of various types of animal behaviour.

8. Role of hermones and pheromones in behaviour.

9. Chronobiology : Biological clock, seasonal rhythms, tidal rhythms.

10. Neuro-endocrine control of behaviour.

11. Methods of Studying animals behaviour.

Biostatistics :—

12. Methods of sampling, frequency distribution and measures of central tendency, standard deviation, standard error and standard deviance, correlation and regression and Chisquare and to t-test.

Economic Zoology :

13. Parasitism, commensalism & host parasite relationship.

14. Parasitic protozoans, helminthis and insects of man and domestic animals.

15. Inspect pests of corps and stores products.

16. Beneficial Insects.

17. Pisciculture and induced breeding.

PAPER II

Cell Biology Genetics, Evolution and Systemic, Bio-Chemistry, Physiology and Embryology.

Section 'A'

Cell Biological Genetics, Evolution and Systematic.

1. Cell Biology-Structure and function of cell and cytoplasmic constituents; structure of nucleus, plasma membrane, mitochondria, golgibodies, endo-plastic reticulum and rebosomes, cell division; mtotic spindle and chromosome movements and meiosis.

Gene structure and function : Watson -Crick model of DNA, replication of DNA Genetic model protein synthesis cell differentiation, sec chromosomes and sex determination.

2. Genetics – Mantelian laws of inheritance re-combination linkage and linkage maps, multiple, alleys; mutation (natural and induced) mutation and evolution meiosis, chromosomet number and form, structural rearrangements; ploy-

podiy; cytotoklasmic inheritance, regulations of gene expression in prokaryotes, and eukaroystes; biochemical genetic, elements of human genetics; normal and apnormal karyotypes; genes and diseases, Eugenics.

3. Evolution and systematic – Origin of life, history of evolutionary through, Lamarck and his works. Darwin and his works, source and nature or organic variation. Natural selection Hardy–Weinberg law, cryptic and warning coloration mimicry; isolating mechanisms and their role. Insular fana, concept of species, sub–species, principle of classifications, zoological nomenclature and international code- Fossils, outline of geological eras phylogeny of horse, elephant, camel, origin and evolution of man, principle and theories of continental distribution of animal zoogeo-graphical realms of the world.

Section 'B'

Biochemistry : Physiology and Embyology.

1. Biochemistry : Structure of carbohydrates, lipids, aminoasids, proteins and nucleic acids. glycolysis and krebs cycle, oxidation and reductions, oxidative phosphorylation, energy conservation and releases, ATP, Cycling AMP, saturated and unsaturated fatty acids, cholesterol, steroid hormones. Types of enyymes, mechanism of enzymes action, immunglobulins and immunity, vitamins and corenzymes Hormones, their classification, byosynthesis and functions.

2. Physiology with special reference to mammals, composition of blood, blood groups in man, coagulation, oxygen and corbondioxide transport, haemoglobin, breathing and its regulations, nephron and urine formation, acib–base balance and honeostasis, temperature regulation in man, mechanism of conduction along axon and across synapses, neurotransmitters, vission, hearing and other receptors; types of muscles, ultrastructures and mechanism of contraction of skeletal muscle; role of salivery gland, liver, pancreas and intestinal glands and digestion, obsorption of digested food, nutrition and balanced diet of man, mechanism of action steroids and peptize hormones, role of hypothalamus, pituitiary thyroid, parathyroid, pancreases adrenal testis, ovary and lines organs and their i nter-relationship, physiology of reprodution in humans, hormonals control of development in man and insects, phero–mens in insects and mammals.

3. Embryology : Gametogenesis, fertilization, types of eggs, cleavage, development upto gastruction in branchostoma, fro and chick; Fate maps of frogs and chick; Metamorphosis in frog. Formation and Fate ot extra embryonic membrane in chick; Formation of anmion allantoise and types of placenta in mammals, function of placenta in mammals; Organisers, Regeneration, genetic control of development Organogenesis of central nervous system sense organs heart and kidney of vertebrate embryos. Agging and its implication in relation to man.

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