KARNATAKA PUBLIC SERVICE COMMISSION

SYLLABUS FOR GAZETTED PROBATIONERS' GROUP `A' & `B'

MAIN EXAMINATION

OPTIONAL SUBJECTS	CODE NUMBER
Agriculture, Agricultural Marketing Co-operation and Sericulture	01
Animal Husbandry and Veterinary Sciences and Fisheries	02
Botany	03
Chemistry	04
Civil Engineering	05
Commerce	06
Criminology	07
Economics	08
Electrical Engineering	09
Geography	10
Law	11
Mathematics	12
History	13
Mechanical Engineering	14
Philosophy	15
Geology	16
Physics	17
Political Science & International Relations	18
Psychology	19
Public Administration	20
Sociology	21
Statistics	22
Zoology	23
Rural Development & Co-operation	24
Hindi	25
Anthropology	26
Urdu	27
Kannada	28
English	29
Management	30

Note: The candidates are not allowed to offer the following combination of subjects

- Political Science & International Relations/Public Administration
- Commerce & Accountancy / Management
- Anthropology / Sociology
- Mathematics / Statistics
- Agriculture, Agricultural Marketing Co-operation & Sericulture/ Animal Husbandry & Veterinary Sciences & Fisheries
- Civil Engineering/Electrical Engineering/Mechanical Engineering
- Economics/Rural Development & Co-operation
- Agriculture, Agricultural Marketing Co-operation & Sericulture/ Rural Development & Co-operation
- Hindi/Urdu/Kannada/English languages.

SYLLABUS FOR GAZETTED PROBATIONERS' GROUP `A' & `B'

MAIN EXAMINATION

PART - B MAIN EXAMINATION

Compulsory Papers:- Kannada and English

The aim of these papers is to test the ability of the candidates to read and understand serious discursive prose and to express ideas clearly and correctly in Kannada and English.

The pattern of questions would be broadly as follows:

ಪತ್ರಿಕೆ – 1, ಕನ್ನಡ

1. ವಿಷಯದ ಸಮಗ್ರ ಅರ್ಥೈಸುವಿಕೆ – 25 ಅಂಕಗಳು
2. ಪದ ಪ್ರಯೋಗ – 25 ಅಂಕಗಳು
3. ವಿಷಯ ಸಂಕ್ಷೇಪಣೆ – 25 ಅಂಕಗಳು
4. ಪದ ಜ್ಞಾನ – 25 ಅಂಕಗಳು
5. ಲಘು ಪ್ರಬಂಧ – 25 ಅಂಕಗಳು
6. ಇಂಗ್ಲೀಷಿನಿಂದ ಕನ್ನಡಕ್ಕೆ ಭಾಷಾಚಿತರ – 25 ಅಂಕಗಳು

Paper - II - English

1. Comprehension of given passages **- 25 marks**
2. Precis writing **- 25 marks**
3. Usage **- 25 marks**
4. Vocabulary **- 25 marks**
5. Short Essay **- 25 marks**
6. Communication Skills **- 25 marks**

Paper III - General Studies

1. Modern History of India and Indian Culture with special reference to the History and Culture of Karnataka
2. Current events of State, National and International importance
3. Statistical Analysis, Graphs and Diagrams

Paper IV – General Studies

1. Indian Polity with special reference to Karnataka State
2. Indian Economy and Geography of India with Special reference to Karnataka Economy and Karnataka Geography
3. The roll and impact of Science and Technology in the development of Karnataka and India.

Optional Subjects

AGRICULTURE, AGRICULTURAL MARKETING, CO-OPERATION & SERICULTURE

(SUBJECT CODE-01)

PAPER -1

Part - A: Agriculture:

Ecology and its relevance to man, natural resources, their management and conservation. Physical and social environments as factors of crop distribution and production, climatic elements as factors of crop growth, impact of changing environment on cropping pattern as indicators of environments, environmental pollution and associated hazards to crops, animals and humans.

Cropping patterns in different agro-climatic zones of the country, impact of high yielding and short duration varieties on shifts in cropping patterns, concepts of multiple cropping, multistory, relay and inter-cropping and their importance in relation to food production, Package of practices for production of important cereals, pulses, oilseeds, fibre, sugar and commercial crops, growth during KHARIF and RABI seasons in different regions of the country.

Important features, Scope and propagation of various types of forestry plantations, such as extension / Social forestry, agro forestry and natural forests.

Weeds, their characteristics, dissemination and associaton with various crops; their multiplication, cultural, biological and chemical control of weeds.

Processes and factors of soil formation, Classification of Indian soils including modern concepts, Mineral and organic constituents of soils and their role in maintaining soil productivity, Problem soils, Extent and distribution in India and their reclamation, Essential plant nutrients and other beneficial elements in soils and plants, their occurrence, factors affecting their distribution, Functions and cycling in soils. Symbiotic and non-symbiotic nitrogen fixation, Phosphorus cycle, Principles of soil fertility and its evaluation for judicious fertilizer use.

Soil conservation; planning on Watershed basis, erosion and run off management in hilly, foot hills and valley land, processes and factors affecting them, dry land agriculture and its problems. Technology for stabilizing agriculture production in rainfed agricultural area.

Water use efficiency in relation to crop production, Criteria for scheduling Irrigations, ways and means of reducing run off losses of irrigation water; Drainage of waterlogged soils.

Farm management-scope, importance and characteristics, Agricultural Production Economics, farm planning and budgeting, economics of different types of fam systems, marketing and pricing of agricultural outputs, price fluctuations and their cost, role of co-operatives in agricultural economy; types and systems of farming factors affecting them.

Agricultural extension, its importance and role, Methods of evaluation of extention programmes, Socio economic survey and status of big, Small and marginal farmers and landless Agricultural labourers, Farm mechanization and its role in Agricultural production and rural employment, Training programmes for extension workers, Land to lab programmes.

Part - B : Sericulture :

Package of practices for mulberry cultivation in rainfed and irrigated conditions monocropping, intercropping etc. Foliar and root diseases of mulberry, mode of infection symptoms and control methods, Insect pests of mulberry, nature of damage, symptoms life cycle and control measures.

Silkworm rearing, sanitation, rearing house environment, leaf quality, improved techniques in silkworm rearing, transportation of cocoons, cocoon market, its role in cocoon transition.

Diseases of silkworm, etiology, symptoms, mode of infection, preventive and control measures of bacterial, viral, fungal and protozoan diseases of silkworm, Pests of silkworm, life cycle, preventive and control measures.

Silk reeling, methods of reeling on charka, cottage basin, filature basin, automic reeling, re-reeling, twisting and weaving, By-products of sericulture.

Economics of mulberry cultivation and silk worm rearing, methods of estimating cost of production of mulberry leaf and cocoon, returns from leaf and silk cocoons economics of leaf and shoot harvesting, income and employment generation from mulberry cultivation, cocoon production and reeling industry, economics of charaka and shoot rearing. Cost and Returns from different systems of silk reeling, charaka cottage basin and automatic reeling.

Part - C : Agricultural Marketing and Co-operation :

Marketing institutions for agricultural produce, TAPCMS, APMC, MARKFED, Marketing Boards. Marketing of livestock products and fish, Marketing of horticultural produce Grading of agricultural produce.

Co-operative institutions in India-Primary Societies, DCC Banks, Apex banks, Agriculture and Rural Development banks, non-agricultural co-operatives, Financial institutions providing agricultural credit-Co-operatives, commercial banks, NABARD, Repayment of loans. Problems of overdues and rural indebtedness.

Institutions facilitating marketing of agricultural produce Primary marketing Societies-Taluk Agricultural produce Co-operative Marketing Societies, Agricultural produce Marketing Committees, MARKFED, NAFED, Marketing Boards - Coffee Board, Tea Board, Spices Board etc. Marketing of live stock and livestock produce-Cattle, Sheep, Milk and milk products, eggs and Fish. Marketing of vegetables and fruits-Concept of HOPCOMS. Role of co-operation in Marketing of horticultural produce, Importance of grading of agricultural product, Grade characters of rice, wheat, jowar, groundnut and cotton. Co-operative institutions in India, Non-agricultural co-operatives, Handloom Weavers' co-operatives, Housing co-operatives, Urban Co-operative banks etc.

Non co-operative institutions providing agricultural credit-commercial bank, Regional Rural Bank, NABARD, Nationalisation of banks, Role of commercial banks in agricultural development, Repayment of loans. Methods of repayment-single payment plan and amortization, Decreasing payment plan and even payment plan, Recovery of loans by financial institutions, Problems of overdues.

PAPER-II

Part-A: Agriculture

Heredity and variation, Mendels law of inheritance, Chromosomal theory of inheritance, Cytoplasmic inheritance, sex linked, sex influenced and sex limited characters, Spontaneous and induced mutations.

Origin and domestication of field crops, Morphology patterns of variations in varieties and related species of important field crops, Causes and utilization of variations in crop improvement.

Application of the principles of plant breeding to the improvement of major field crops, Methods of breeding of self and cross pollinated crops, Introduction, selection, hybridization, heterosis and its exploitation, Male sterility and self incompatibility, Utilization of mutation and polyploidy in breeding.

Seed technology and its importance, Production, processing and testing of seeds of crop plants, Role of National and State seed organizations in production, processing and marketing of improved seeds.

Physiology and its significance in agriculture, Nature, Physical properties and Chemical constitution of protoplasm, Imbibition, Surface tension, Diffusion and Osmosis. Absorption and translocation of water, Transpiration of water economy.

Enzymes and plant pigments, Photosynthesis, Modern concepts and factors affecting the process, Aerobic and anaerobic respiration.

Growth and development of plants, Photo perlodism and vernalization, Auslns, Hormones and other plant regulators and their mechanism of action and importance in agriculture.

Climatic requirements and cultivation of major fruit plants and vegetable crops. Package of practices and the scientific basis for the same, handling and marketing problems of fruits and vegetables, Principal methods of preservation, Important fruit and vegetable products, Processing techniques and equipment, Role of fruits and vegetables in human nutrition. Landscape and floriculture including raising of ornamental plants and design and layout of lawns and gardens.

Diseases and pests of fields, vegetable, orchard and plantation crops of India and measures to control them, causes and classification of plant diseases, Principles of plant disease control including exclusion, eradication, immunization and protection, Biological control of pests and diseases. Integrated management of pests and diseases. Pesticides and their formulations, Plant protection equipments, their care and maintenance.

Storage practice of cereals and pulses, Hygiene of storage godowns, Preservation and remedial measures.

Strategies for maketing of agricultural inputs, Processing of agricultural products, Milk and oil-seeds federations, Food production and consumption trends in India, National and International food policies, Procurement, distribution, processing and production constraints, Relation of food production to national diatery pattern, Major deficiencies of calorie and protein.

Part - B : Sericulture

Seed Organisation, three tier multiplication programme, norms for maintenance of P3, P2 and P1 stocks, seed area advantages and disadvantages, seed legislation act, hibernation schedule for 6 and 10 months, role of LSPs in production of hybrid eggs, economics of silkworm egg production.

Recent development in non-mulberry sericulture, improved technology for the production of tasar, muga, eri and oak-tasar varieties, Economics of tasar, muga and ericulture.

Aims and methods of silkworm breeding, importance of Germ plasm bank, general and specific combining ability; sex linked varieties, role of heterosis in production of new breeds, evaluation of new varieties.

Mulberry breeding, importance of germ plasm bank, aims and methods of breeding, selection, hybridization, role of polyploidy in breeding programme, evaluation of new mulberry varieties.

Sericulture Extension; Extension education, different methods, Principles and objectives, role of private organizations in the development of sericulture, Role of Technical service centers in improvement of sericulture.

Part - C : Agricultural Marketing & Co-operation

Policies on marketing of agricultural products, storage, processing, transportation etc. Buffer stocking in India, Price policies for Output-minimum support price, Procurement price, Statutory minimum price, Commission on Agricultural costs and prices and its role, pricing of inputs for agriculture, Role of Government in pricing of inputs, subsidies on fertilizers, Public distribution system in India, Procurement, stocking and distribution, food subsidies and their impact on the economy, effect of food subsidy on poverty alleviation, problems in marketing of agricultural products and remedial measures, grading of live stock-cattle, sheep and goat, poultry and fish -Grading of livestock products-Ghee, eggs, chicken etc.

Role of Co-operatives in rural development-distribution of agricultural inputs, food grains, marketing of output through Co-operatives.

Agricultural project analysis, Preparation of project proposals in agriculture-crops, irrigation, plantations, dairy and poultry. Feasibility tests for projects, Technical feasibilities, financial feasibilities of projects, Compounding, discounting, net present value, benefit cost ratio, payback period and internal rate of return.

Animal Husbandry and Veterinary Sciences and Fisheries (Subject Code-02)

PAPER -1

(Part-A is compulsory for all candidates. In addition to Part-A. each candidate shall choose either Part-B or Part-C)

Part-A:

Dairy Production and Management, Comparison of Dairy Farming in India, with advanced countries, Economic Dairy Farming-housing, feeding, breeding and management of dairy animals.

Animal Nutrition-sources of energy, protein, minerals, vitamins and their metabolism. Deficiency of nutrients and their effect on the production performance of cattle, pig and poultry.

Semen collection, processing, preservation and artificial insemination in cattle and buffaloes.

Marketing of animal products in India, production, processing, packaging of milk, milk products and meat.

Major fish producing countries in the world, India's fish production, Types of water bodies-marine, brackishwater and freshwater, Aquatic resources of India-seas, estuaries, rivers, lakes, reservoirs, tanks and ponds, Importance of fisheries in the economy of the country, Fisheries planning and administration, Export of marine products, Exclusive economic zone and fisheries legislation.

Part - B :

Animal nutrition-energy sources, metabolism and requirements for maintenance and production of milk, meat, egg and wool, evaluation of feed as a source of energy, Sources of protein, metabolism and requirements, Energy protein ratio, Vitamins, hormones and growth stimulating substances - sources, requirements and interrelationship with minerals.

Advanced animal nutrition, dairy cattle, nutrients and their metabolism with reference to milk production and its composition, Nutrient requirements for calves, heifer, dry and milking cows and buffaloes.

Nutrients and their metabolism with reference to poultry, meat and egg production. Nutrient requirements and feed formulation in poultry. Non-ruminant nutrition, nutrients

and their metabolism with special reference to growth and quality of meat production, Nutrient requirements and feed formulation for pigs.

Growth and animal production - prenatal and postnatal growth, maturation, measures of growth factors affecting growth, conformation, body composition.

Hormonal control of mammary gland development, milk secretion and milk ejection, composition of milk of cows and buffaloes.

Male and female reproductive systems and their functions, Semen quality, preservation and artificial insemination, Factors affecting semen preservation, composition of diluents, sperm concentration, transport of diluted semen, Frozen semen production, preservation and utilization, Embryo transfer technology, Dairy farming-dairying under mixed farming and as a specialized farming, economic dairy farming. Capital and land requirement for dairy farm.

Sheep, goat, pig and poultry farming problems and prospects of sheep, goat, pig and poultry farming in India, Economic meat and egg production, General problems of sheep, goat, pig and poultry management.

Organisation of rural milk procurement, collection and transport of raw milk, quality testing, grading raw milk, quality storage, grades of whole milk, skimmed milk and cream, legal standards, sanitation requirements for clean and safe milk and for milk plant equipment.

Part - C:

Taxonomy, anatomy and biology of commercially important finfish and snellfish, Major marine fisheries, sardines, mackerel, Bombay-duck, tunes, elasmobranchs, penaeid and nonpenaeid prawns, lobsters and molluscs, Fisheries of rivers, reservoirs, brackishwater lakes and estuaries and their management, Fish population biology, Physical, chemical and biological oceanography; upwelling, Limnology; nutrient cycle; food cycle.

Freshwater aquaculture, Carp seed production-induced breeding and bund breeding; different kinds of hatcheries, Carp seed transportation, Preparation and management of nurseries rearing and stocking ponds, Common aquatic weeds and their control, Eradication of predatory fishes and aquatic insects, Liming and fertilization, Supplementary feeding, Nutritional requirements of carps and prawns, Composite culture, Culture of cold water species, Fish diseases & treatment, Culture of penaeid and non-penaeld prawns, Life-history, Hatchery production of seed, Induced maturation, Seed transportation, preparation and management of production ponds, Common diseases and their treatment, Economics of carp and shrimp farming, Marlculture, culture of flnflsh In cages, Mussel, edible oysters, pearl oyster, clam and seaweed culture.

Paper-II

Part-A is compulsory for all candidates. In addition to Part-A, each candidate shall choose either Part-B or Part-C

Part-A:

Dairy Co-operative movement in India. Status of cross-breeding of cattle, sheep and pig in India, Draft animal power in India, important draft breed of Karnataka, their characters, utilization and preservation.

Fodder requirement in dairy cattle, fodder production and preservation, Feeding regime for young stock, bulls, heifers, breeding animals and pigs.

Extension methods adopted to educate farmers on dairy production, piggery, sheep and poultry production under rural conditions, Different possibilities and methods to provide self-employment to educated youth in rural areas.

Fish and snellfish, Protein nutritive aspects, Nutritive aspect of fish oil, vitamins and minerals, Fish in animal nutrition, Food poisoning caused by fish and fishery products, Polluted waters-contamination of fish, Salmonella problem in sea foods, Proximate composition of fish, Non-protein nitrogenous compounds, Important bacteria responsible for fish spoilage, products of spoilage.E. Coil as indicator of pollution and their significance in sea foods.

Part - B :

Genetics and Animal breeding, Probability applied to Mendelian inheritance, Concept and measurement of inbreeding and heterozygocity. Polygenic systems and laboritance of quantitative traits, heritability and reneatability, genetic and environmental Correlations, Gene frequency and its estimation and forces changing the gene frequency, Hardy Weinberg's law, Genetic nature of difference between species, races and breeds, Resemblance between Breeding systems and mating systems, inbreeding, outbreeding, crossbreeding and its uses, Phenotypic assortative mating, Breeding for threshold traits, different types and methods of selection.their effectiveness and limitations, Evaluation of genetic gains through selection, General and specific combining ability.

Physiology of blood and circulation, respiration and excretion, Endocrine glands in health and diseases.

Most common cattle, sheep, goat, poultry and pig diseases, their etiology, symptoms, treatment and prevention,

Milk product technology-selection of raw materials and assembly, Production, processing, storing, distributing and marketing of milk products.

Testing, grading and judging milk products, ISI and Agmark specifications, legal standards, quality control and nutritive properties.

Meat hygiene: General principles and problems of meat inspection in India, diseases transmitted from animals to man, By-products from slaughter houses and their economic utilization, Jurisprudence of veterinary practice.

Part - C:

Post-mortem, changes in fish biochemical and microbiological spoilage of fish, Handling of fresh fish, on-board the vessel and at landing centers, sealing methods used for fresh fish-principles and importance.

Freezing of fish, historical developments, difference between chilling and freezing, methods of freezing, Freezents used in commerce, freezing curves, depression of freezing point, eutectic point. Mechanism of ice crystal formation and cell damage, rate of freezing, slow freezing versus quick freezing; advantages and quick freezing, Production styles of frozen fish, methods of thawing, thawing curve, glazing and packaging of frozen fish, quality of raw material and its effect on final products, Quality control method during processing and cold storage of sea foods.

Canning of fish - historical developments, advantages of canning compared to other methods, Raw material and submaterial characteristics and their suitability, General canning procedures, principles, of thermal processing, Method of canning, problems related to fish canning, Spoilage during storage, qualify standard, plant sanitation and waste disposal.

Fish products technology - principles and methods of preparation of various fish paste products like fish sausage, fish ham, etc., Importance of elasticity in fish paste products, Fish muscle proteins and their role in elasticity formation, Suitability of different varieties of fish for the preparation of fish paste products, additives and preservatives used and their role, Role of nitrites in meat curing, Production of minced meat-method of preparation, preservation and uses, marienading of fish, method of preparation, preservation and uses. Differences between marienading and pickling.

Fish meal production raw material, handling and preservation of raw material, preparation of fish meal, storage, its use in animal nutrition, Fish oil and its use in foods, Fish silage and its use in animal nutrition, Fish hydrolysates, fish protein concentrate, insulin, pearl essence, leather, fish glue, gelatin, chitin, chitosan, shark

fin rays and fish maws - methods of preparation and uses, non-edible uses of fish oil. Seaweeds-proceesing and utilization.

Indigenous and mechanized fishing crafts in India, Types of fishing gears, Properties of fishing gear materials and their identification, Construction of net webbing - types of mesh and webbing, shaping of webbing, hanging ratios, hung depth, net mounting, mending of webbing, model testing methods for fishing gears, Types of otter boards used in trawling, Floats, buoys, hooks and sinkers-types and materials used, Deck equipments-winches, towing blocks, gallows, Net handling devices-power blocks, triplex drums, net reels, rollers, line hauler and gurdies, Commercial fishing methods-traveling, line fishing, seining, gill-netting, trap fishing.

Principles of refrigeration, uses of refrigeration, refrigeration tone, sensible heat, latent heat, specific heat, simple vapour compression refrigeration system, Different types of freezers and their uses, different types of icemaking plants and their uses, Refrigerants used in commercial refrigeration systems; properties of refrigerants; leak detection of refrigerants.

Botany (Subject Code-03)

PAPER -1

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 of pollution using microorganisms.

2. **Pathology** : Important plant diseases in India caused by viruses, bacteria, mycoplasma, fungi and nematodes. 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 aspect, and ecology and economic importance of algae, fungi, bryophytes and pteridophytes, Principal distribution in India.

4. **Phanerogams** : Anatomy of wood, secondary growth, Anatomy of C3 and C4 plants, stomatal types. Embryology, barriers to sexual incompatibility, Seed Structure, Apomixis and Polyembryony, Palynology and its applications. Comparision of systems of classification of angiosperms, modern trends in biosystematics, Taxonomic and economic importance of Cycadaceae, Pinaceae, Genetales, Magnoliaceae, Ranunculaceae, Cruciferae, Rosaceae, Leguminosae, Euphorbiaceae, Malvaceae, Dipterocarpaceae, Umbelliferae, Asclepiadaceae, Verbenaceae, Solanaceae, Rubiaceae, Cucurbitaceae, Compositae, Gramineae, Palmae, Liliaceae, Musaceae and Orchidaceae.

5. **Morphogenesis** : Polarity, Symmetry and totipotency, differentation and dedifferentiation 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 membranes, detailed study of mitosis and meiosis, numerical and structural variations in chromosome and their significance, study of polytene and lampbrush chromosomes structure, behaviour, and cytological significance.

2. **Genetics and Evolution** : Development of genetics and gene concept, structure and role of nucleic acids in protein synthesis and reproduction, Genetic code and

regulation of gene expression, gene amplifications, mutation and evolution, Multiple factors, linkage and crossing over, methods of gene mapping, sex chromosomes and sexlinked inheritance, male sterility, its significance in plant breeding. Cytoplasmic inheritance, Elements of human genetics, standard deviation and Chisquare analysis, Gene transfer in microorganisms, Genetic engineering, Organic evolution, evidence, mechanism and theories.

3. **Physiology and Biochemistry**: Detailed study of water relations, Mineral nutrition and ion / 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 substances, their chemical nature, role and applications in agri-horticulture.

   Agrochemicals, Stress physiology, Vernalisation, Fruit and seed physiology, dormancy, storage and germination of seed, parthenocarpy, fruit ripening.

4. **Ecology** : Ecological factors, concept and dymanics of community, succession, 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, fiber, paper, rubber, beverages, alcohol, drugs, narcotics, resins and gums, essential oils, dyes, mucilage, insecticides and pesticides, Plant indicators, Ornamental plants, Energy plantation.

Chemistry (Subject Code -4)

PAPER -1

1. Atomic structure and chemical bonding, Quantum theory, Heisenberg's uncertainty principle, Schrodingerwave equation (time independent), interpretation of the wave function, particle in a one-dimensional box, quantum numbers, hydrogen atom wave functions.

   Shapes of s,p,d orbitals, ionic bond; Lattice energy, Born-Haber cycle, Fajans rules dipole moment, characteristics of ionic compounds, electronegativity differences, Covalent bond & its general characteristics, Valence bond approach, Concept of resonance and resonance energy, Electronic configuration of H_2-$2HN_2$ O_2P_2 NO.CO and HF molecules in terms of molecular orbital approach, Sigma and pi bonds, Bond order, bond strength & bond length.

2. **Thermodynamics** : Work, heat and energy, First law of thermo-dynamics, Enthalpy, heat capacity Relationship between Cp and Cv, Laws of thermochemistry, Kirchoff's equation Spontaneous and non-spontaneous changes, second law of thermodynamics, Entropy changes in gases for reversible and irreversible processes, Third law of thermodynamics, Free energy, variation of free energy of a gas with temperature, pressure and volumes, Gibbs Helmhottz equation, Chemical potential, Thermodynamic criteria for equilibrium, Free energy change in chemical reaction and equilibrium-Constants, effect of temperature & pressure on chemical equilibrium, calculation of equilibrium constants from thermodynamic measurements.

3. **Solid State** : Forms of solids, law of constancy of interfacial angles, Crystal systems and crystal classes (crystallographic groups) Designation of crystal faces, lattice structure and unit cell Laws of rational indices, Bragg's law, X-ray diffraction by crystals, Defects in crystals, Elementary study of liquid crystals.

4. **Chemical Kinetics** : Order and Molecularity of a reaction, Rate Equations (differential & integrated forms) of zero, first and second order reactions, half life of a reaction, Effect of temperature, pressure and catalysts on reaction rates, Collision theory of reaction rates of bimolecular reactions, Absolute reaction rate theory, Kinetics of polymerization and photo-chemical reactions.

5. **Electrochemistry**: Limitations of Arrhenlus theory of dissociation, Debye-Huckel theory of strong electrolytes and Its quantitative treatment, Electrolytic conductance theory and theory of activity co-efficient Derivation of limiting laws for 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 laws of photochemistry. Quantum efficiency, Reasons for high and low quantum yields, Photo-electric cells.

8. General chemistry of 'd' block elements.

   a) Electronic configuration, introduction to theories of bonding in transition, metal complexes, Crystal field Theory and its modifications, applications of the theories in the explanation of magnetism and electronic spectra of metal complexes.

   b) Metal Corbonyls : Cyclopentadienyl, Olefin and acetylene complexes.

   c) Compounds with metal-metal bonds and metal atom clusters.

9. **General Chemistry of f block elements :** Lanthanides and actinides; Separations, Oxidation states, magnetic and spectral 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 stability of reactive intermediates (Carbocations, carbanions, free radicals, carbenes, nitrenes and benaynes).

   SN1 and SN2 mechanisms - H1, H2 and E1 CB eliminations - cis and trans addition of carbon to carbon double bonds - mechanism of addition to carbon oxygen, double-Michael addition-addition to conjugated carbon-carbon double bonds-aromatic electrophilic and nucleophilic substitutions, allylic and benzylic; substitutions.

2. **Pericyclic reactions** : Classification and examples .- and elementary study of woodward - Hoffmann rules of pericyclic reactions.

3. **Chemistry of the following name reactions :** Aldol condensation, Claisen condensnation, Dieck men reaction, Perkin reaction, Reimer-Tiemann reaction, Cennizzaro reaction.

4. Polymeric Systems :

a) Physical Chemistry of Polymers, End group analysis, Sedimentation, Light Scattering and Viscosity of Polymers.

b) Polythylene, Polystryene, Polyvinyl Chloride, Ziegler Natta Catalysis, Nylon, Terylene.

c) Inorganic Polymeric systems; Phosphonitric halide compounds; Silicones; Borazines.
Friedel - Craft reaction, Reformatsky reaction, Pinacol - Pinacolons, Wagner - Meerwein and Beckmann rearrangements, and their mechanisms - uses of the following reagents in organic systhesis: 05 04 HI04, NBS, diborane, Naliquid -ammonia, NaBH4, LiA LH4.

5. Photochemical reactions of organic and inorganic compounds : Types or reactions and examples and synthetic uses-Methods used in structure determination; Principles and applications of UV,visible, IR, NMR and mass spectra for structure determination of simple organic and inorganic molecules.

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, liner asymmetric and bent tri-atomic molecules (infrared and Raman).

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

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

(v) Nuclear magnetic Reasonance: Chemical Shifts, spin-spin coupling, (vi) Electron Spin Reasonance; Study of inorganic Complexes and free radicals.

Civil Engineering (Subject Code - 05)

PAPER -1

(A) THEORY AND DESIGN OF STRUCTURES :

(a)Theory of Structures Energy theories - Castrigliano theorems I and II, unit load method and method of consistant deformation applied to beams and pinpointed plane frames, Slope deflection, moment distribution and Keni method of analysis applied to indeterminate beams and rigid frames.

Moving loads, oriteries for maximum sheer force and bending Moment in means traversed by a system of moving loads, Influence lines for simply supported planes, pinjointed girders.

Arches: Three hinged, two hinged and fixed arches-rib, shortending and temperature effects Influence lines.

Matrix Methods of Analysis : Force method and displacement method.

(b)Structural Steel: Factors of safety and load factors.

Design of tension and compression members, beams of built up section, riveted and welded plate girders, gantry girders, stanchions with battena and lacings, Slab and gusseted bases

Design of highway and railway bridges -Through and deok, type plate girder, Warren girder and Parttruss.

c) Reinforced concrete. Limit state method design-Recommendations of IS codes, Design of one-way and two-way slabs, simple and continuous beams of rectangular, T and L sections.

Compression chambers under direct load with or without eccentricity, footings, Isolated and combined.

Rataining walls, antilever and counterfort types.

Methods and systems of prestressing Anchorages, Analysis and design of sections for flexurs, loss of prestress.

(B) FLUID MECHANICS :

Fluid properties, and their role in fluid motion, fluid statics including forces acting on plane and cured surfaces.

Kinematics and Dynamics and Flund Flow, Velocity and accelerations, stream lines, equation of continuity, irrotational and rotational flows, velocity potential and stream function flownets and methods of drawing flow net, sources and sinks, flow separation and stagnation.

Euler's equation of motion, energy and momentum equations and their applications to pine flow, free and forced vortices, plane and curved stationery and moving vanes, sluice gates, weirs, orifioe meters and venture meters.

Dimensional Analysis and Similitude; Buckingham's Pitheorem, similarities, model laws, undistorted and distorted models, movable bed models, model calibration.

Laminar Flow : Laminar flow between parallel, stationary and moving plates, flow through tube, Reynold's experiments, lubrication principles.

Boundary Layers : Laminar and turbulent boundary layer on a flat plate, laminar sublayer, smooth and rough boundaries, drag and lift.

Turbulent flow through pipes: Characteristics of turbulent flow, velocity distribution and variation of friction factor, hydraulic grade line and total energy line, siphons, expansions and contractions in pipes, pipe net works water hammer;

Opern Channel Flow: Uniform and non-uniform flows, specific energy and specific force, critical depth, resistance equations and variation of roughness coefficient; Rapidly varied flow, flow varied flow, flow in contractions, flow at suddent drop, hydraulic jump and its applications, surges and waves; gradually varied Flow differential equation for gradually varied flow, classification of surface profiles, control section, step method of integration of varied flow equation.

(C) SOIL MECHANICS AND FOUNDATION ENGINEERING :

Soil composition, influence of clay minerals on engineering behaviour, Effective stress principles, change in effective stress due to water flow condition, static water table and steady flow conditions, permeability and compressibility of soils.

Strength behaviour, strength determination through direct and triaxial tests, total effective stress strength parametered, total and effective strice paths.

Methods of site exploration, planning a sub surface exploration programme; sampling procedured and sampling disturbance, penetration tests and plate load tests and date interpretation.

Foundation types and selection, footings, rafts, piles, floating foundations, effect of footing shapes, dimensions, depth of embedment, load inclination and ground water on bearing capacity, settlement components, compatation for immediate and consolidation settlements, limits on total and differential settlement, correction for rigidity.

Deep foundations, philosophy of deep foundations, piles, estimation of individuals and group capacity, static and dynamic approaches, pils load tests, separation into skin friction and point bearing under reamed piles, well foundation for bridges and aspects of design.

Earth pressure, states of plastic equilibrium, Culmann's procedure for determination of lateral, thrust; determination of anchor force and depth of penetration, reinforced earth retaining walls; concept, materials, and applications.

Machine foundations modes of vibrations, determination of natural frequency, crieteria for design, effect of vibration on soils, vibration isolation.

(D) COMPUTER PROGRAMMING :

Types of computers, components of computers, history and development, different languages.

Fortran / Basic programming, constants, variables, expressions, arithmetic statements, library functions, control statements, unconditional GO-TO statements, computed GO-To statements, IF and DO statements, Continue, Call, Return, Stop, END Statements, I/Q statements, Formats, field specifications.

Subscripted variables, arrays, Dimension Statement, function and subroutine, subprogrammes, application to simple problems with flow-charts in Civil engineering.

PAPER - II

Part - A Building Constructions :

Physical and mechanical properties of construction materials, factors influencing selection, brick and clay products, limes and cements, polymeric materials and special uses, damp-proofing materials.

Brickwork for walls, types, cavity walls, design of brick masonary walls as per I.S. Code, factors of safety, service, ability and strength requirements, detailing of walls, floors, roofs, ceiling, finishing of building, plastering, pointing, painting.

Functional planning of building, orientation of buildings, elements of fire - proof construction, repairs to damaged and cracked buildings; use of ferro cement, fibre reinforced and polymer concrete in construction; techniques and materials for low cost housing.

Building estimates and specifications, construction scheduling, PERT and CPM methods.

Part - B Transportation Engineering :

Railway: Permanent way, ballast, sleeper, fastenings, points and crossing, different types of turn outs, cross-over, setting out of points.

Maintenance of track, superelevation, creep of rail ruling gradients, track resistance, tractive effort =curve resistance.

Station yeards and machinery, station building, platform siding, turn tables, signals and interlocking, level crossings.

Roads and Railways, Traffic engineering and traffic surveys, intersections, road signs, signals and marking.

Classification of roads, planning and geometric design.

Design of flexible and rigid pavements, Indian Roads Congress guidelines on payment layers and design methodologies.

Part - C Water Resources and irrigation Engineering :

Hydrology, Hydrologic cycle, precipitation, evaporation, transpiration, depression, storage, infiltration, hydrograph, unit hydrograph, frequency analysis, flood estimation.

Ground Water Flow: Specific yield, storage co-efficient, co-efficient of permeability, confined and unconfined aquifers, radial flow into a well under confined and unconfined conditions, tubewells, pumping and recuperation tests, ground water potential.

Water Resources Planning : Ground and surface water resources, single and multipurpose projects, storage capacity of reservoirs, reservoir losses, reservoir sedimentation, flood routing through reservoirs, economics of water resources projects.

Water Requirement for Crops : Consumptive use of water, quality of irrigation water, duty and delta, irrigation methods and their efficiencies.

Canal : Distribution system for canal irrigation, canal capacity, canal losses, alignment for main and distributary canals, most efficient section; lined channels, their design regime theory, critical shear stress, bed load, local and suspended load transport, cost analysis of lined and unlined canals, drainage behind lining.

Water Logging : Causes and control, drainage, system design salinity.

Canal Structures: Design of regulation, cross drainage and communication works, cross regulators, head regulators, canal fails, aqueducts, metering flumes and canal outlets.

Diversion Head Works : Principles of design of weirs on permeable and impermeable foundations, Khosla's theory, energy dissipation, stilling basins, sediment exclusion.

Storage works : Types of dams, design, principles of rigid gravity and earth dams, stability analysis, foundation treatment, joints and galleries, control of seepage, construction methods and machinery.

Spillways : Types, crest gates, energy dissipation.

River Training : Objectives of river training, methods of river training.

Part - D Environmental Engineering :

Water Supply : Estimation of water resources, ground and surface water, ground water hydraulic, predicting demand of water, impurities of water and their significance, physical, chemical and bacteriological analysis, water born diseases, standards for potable water.

Intake of Water : Pumping and gravity schemes, Water treatment, Principles of coagulation, flocculation and sedimentation; slow, rapid, pressure, biflow and multimedia filters, chlorination, softening, removal of taste, odour and salinity Water storage and balancing reservoirs types, location and capacity.

Distribution Systems: Layout, hydraulics of pipelines, pipe fittings, valves including check and pressure reducing valves, meters, analysis of distribution systems using Hardy Cross method, general principles of optimal design based on cost headloss ratio criterion, lead detection, maintenance of distribution systems, pumping stations and their operations.

Sewerage Systems : Domestic and industrial wastes, storm sewage, separate and combined systems, flow through sewers, design of sewers, sewer appurtenances, manholes, inlets, junctions, siphon.

Sewege Characterisation : BOD, COD. Solids, dissolved oxygen, nitrogen and TOC. Standards of disposal in normal water course and on land.

Sewege Treatment : Working principles, units, chambers, sedimentation tank, trickling filters, oxidation ponds, activated sludge process, septic tank, disposal of sludge, recycling of waste water.

Solid Waste : Collection and disposal.

Environmental Pollution : Ecological balance, water pollution control acts, radio active wastes and disposal, environmental impact assessment for thermal power plants, mines.

Sanitation : Site and orientation of buildings; ventilation and damp proof courses, house drainage, conservancy and water born system of waste disposal, sanitary appliances, latrines and urinals, rural sanitation.

Commerce (Subject Code - 06)

Paper -1: Accounting and Finance

Part -1: 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 Exemption, Depreciation and Investment allowance, Simple problems on 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 segregating 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, Algebric formula and graphical representation, shutdown point-Techniques of cost control and cost reduction - budgetary control-flexible budgets-Standard costing and variable analysis-Responsibility accounting-bases of charging overheads and their inherent fallacy-Costing for pricing decision.

Significance of the asset 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:

Concept and Scope of Financial Management-Financial goals of corporations-Capital budgeting, Rules of the thumb and Discount, cash flow approaches-Incoporating uncertainty in investment decisions-Designing an optional capital structure-Weighted average cost of capital and the controversy surrounding the Modigliani and Miller model, Sources of raising short-term, intermediate and long term finance-Role of public and convertable debentures-Norms and Guidelines regarding debt-equity ratios-determinants of an optima dividend policy-optimising models of James Walter and John LintnerForms of dividend payment - Structure of working capital and the variable affecting the level of difference of components - Cash flow 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 deficiencies of Indian Money Market Structure of assets and liabilities of commercial banks-Achievements and failures of nationalized Regional Rural Banks-Recommendations of the Tandon (P.L.) study group on following 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 exchange 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: Organization Theory and Industrial Relations

Part -1: Organization 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-Format organization , Type, Structure-Line and Staff, functional matrix, and project-Informal organization-functions and limitations.

Evolution of organization theory; Classical, Neo-classical and system approach Bureaucracy, Nature and Basis of power, Sources of power, Power structures and politics, Organizational behaviour as a dynamic system, Technical, Social and power systems, Interrelations and interactions-perception, Status system, Theoritical and emperical foundation of Mas-Low, cgregor, Herzberg, Likert, Vroom, Porter and Lawler, Adam and Human Models of motivation, Morals and productivity, Leadership, Theories and styles, Management of conflicts in organization, Transactional Analysis, Significance of culture to organizations, Limits of rationality, Simon-March approach. Organizational change, adaptation, growth and development, organizational 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 outside leadership-Workers educational and other problems-

Collective bargaining-approaches conditions, limitations 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 Indian Role of Personnel department in the Organization-Exeuctive development, Personnel policies, Personnel audit and personnel research.

Criminology (Subject Code-07)

PAPER -1

1. Introduction to Criminology

a) Definition, Scope and Objectives of Criminology.

b) Relation between Criminology - Law, Sociology, Psychology, Forensic Science and Correctional Administration, Anthropology.

c) Crime-meaning and definitions and characteristics.

d) Classfications of Crime :
   - i) British Common law
   - ii) Statistical
   - iii) Indian Penal Code
   - iv) Bonger and Lambrose
   - v) Scientific classification

e) Methods of Criminology
   - i) Statistical
   - ii) Experimental
   - iii) Case study
   - iv) Study of Criminal in natural environs
   - v) Observation

2. Schools of Criminology

a) Pre-scientific Schools

b) Classical and Neo-classical

c) Cartographic School

d) Socialist School

e) Typological S i) Lambros ii) Mental Testers iii) Psychiatric school

f) Sociological School: i) Differential Association Theory ii) Multiple factor analysis

g) Classification of Criminals: i) Cesare Lambros ii) Charles Goring iii) M.J. Sethna, iv) Scientific classification

3. Criminal Patterns

a) Habitual Criminal

b) Professional Criminal

c) White collar Criminal

d) Organised Crime and de-notified tribes

e) Etimology of Crime

a) Criminal Law, Meaning and definitions

b) Characteristics of Criminal Law.

G) Victimology:

a) Meaning and typology of Victims

b) Victimising factors

c) Problems of Victims

d) Compensation and Restitution of Victims.

4. a) General Explanations and General exceptions.

b) Offences against human body, Murder, hurt, criminal force and assault, kidnapping, abduction and rape.

c) offences against property;Theft, Extortion, burglary, dacoity.

5. a) Organisational set up of Criminal Courts in India.

b) Powers of Criminal Courts

c) Police powers of arrest, search and seizure.

d) Provisions regarding bail and appeal.

6. 1. a) Applicability and salient features of Indian Evidence Act.

2. a) Types of evidences.

b) Admissions and confessions

c) Dying declaration

d) Expert evidences.

7. 1. a) Meaning, Importance and historical development of Forensic science.

b) Principles of Forensic Science and State and Central Forensic Science Laboratories.

2. a) History and importance of Finger prints and Finger Print Bureau.

b) Principles of Dactyloscopy

c) Finger Print Patterns

d) Chance Prints and their development.

e) Henry's classifications of Finger Prints.

f) Foot prints-tupes, methods of recording.

g) Gait pattern.

8. 1. a) Ballistics - Importance and classifications in fire arms.

b) Identification of Fire arms and ammunitions In Crime, detection,

c) Determination of range of Firing,

d) Tool Marks, types and methods of examination and Indentification.

2. a) Glass fractures-Determination of direction of force.

b) Blood-tests and groups.

c) Body fluids - Importance of semen, salvia and Urine in crime detection.

d) Hair morphology and identification.

e) Examination of questioned documents - types

(1) Hand Written (2) Type Written, (3) Erased, (4) altered, (5)Obliterations.

f) Counterfeiting of coins and forged notes.

9. 1. a) Inquest, Coroners, Magistrate and Police.

b) Medico-legal importance of various types of wounds and injuries.

c) Death-Modes and signs of death, changes after death.

d) Identification of living and dead.

2. a) Classification of poisons.

b) Study of Datura, Opium, Arsenic, Carbon monoxide, Insecticides and Potassium Cynide.

c) Factors modifying the actions of poison.

d) Routes of administrations and eliminations.

e) Medico-legal importance of poisons in crime detection.

PAPER - II

Chapter I

1. a) Role of family in relation to Crime and delinquency.

b) Crime and delinquency in relation to Urbanism and modernization.

2. a) Mass-media and Crime,

b) Pronographic literature

c) Prostitution, Prevention of “Immoral Traffi in Women and Girls Act, 1986.

d) Suicide

e) Alcoholism and drug Addiction

Chapter II

1. a) Dowry menace-meaning, causes and effects and Dowry Prevention Act,

   b) Supper Crime-Terrorism-Meaning, Modolltles, causes and effects. The Terrorist and Desruptlve Activities (Prevention) Act, 1986 (Tada)

   c) Communical violence-causes and effects-preventive measures.

Chapter III

1. a) Concept of Normal and abnormal behaviour

   b) Personality type in relation to crime and delinquency.

   c) Psychoses, Psychoneuroses and Manias in relation to Crime and delinquency.

   d) Mental deficiency and Psycho-sexual behaviours in relation to Crime and delinquency.

Chapter IV

1. a) Organisational set up of police at State and cental level

   b) Powers and duties of police.

   c) Policing of Metropolitan Cities and Rural areas.

   d) Crime prevention-Partolling, Surveilance and Criminal intelligence.

2. a) Registration of cases - F.I.R. Charge Sheet and Final report.

   b) Methods of investigation: Informers, Interogation of suspects, Interviewing of witnesses.

   c) Instrumentation.

   d) M.O.B. Dog squad, Scientific Aid Units.

Chapter V

1. a) Scene of Crime-Meaning and Importance.

   b) Types of Crime Scenes.

2. a) Examination of scene of Crime-Methods, Preliminaries

   b) Photography and sketching.

   c) Panchanama

   d) Procedure of Handling, Packing and forwarding physical clues to Experts.

Chapter VI

1. a) Investigation-Meaning, qualities of an Investigating Officer.
   b) Procedure of Investigation of Murder, Automobile Accident, Hijacking and Rape.
   c) Police Public relations.

Chapter VII

1. a) History of Punishment,
   b) Theories of Punishments
   c) Forms of punishments.

2. a) Origin and development of Indian prison system.
   b) Prison Administration
   c) Open Air Prisons.

Chapter VIII

1. a) Probation - Meaning, Importance, advantages, disadvantages and Probation of Offenders Act, 1956.
   b) Parole-Meaning-importance, advantages and disadvantages.
   c) After-care services.

2. a) Correctional Institutions-Juvenile Home, Special Home, Borstal School, State Homes, Juvenile Service Bureau and Juvenile Clubs.
   b) Juvenile-Court-Importance and functions.
   c/) Juvenile Justice Act, 1986.
   d) Voluntary organizations and their role in correction of Offenders.

Chapter - IX

a) Unusual Problems in Correction
   i) Homo-sexuality (ii) Custodial relations.
b) Community based corrections and Programmes for Offenders.
c) Applications of Psycho-therapy in the correction of Offenders:
   i) Free- Association ii) Client Centres Therapy.

Economics (Subject Code - 08)

PAPER -1

Chapter:

1. The Framework of an economy; National Income Accounting. ,
2. Economic choice; Consumer behaviour-producer behaviour and market forms.
3. Investment decisions and determination of income and employment. Micro-economic models of income, distribution and growth.
4. Banking, Objective and instruments of Central Banking and Credit Policies in Planned developing economy.
5. Types of taxes and their impacts on the economy, the impacts of the size and content of budgets, objectives and Instruments of budgetary and fiscal policy in a planned developing economy.
6. International Trade Tariffs, The rate of exchange, The balance of Payments, International Monetary and Banking Institutions.

Economics

PAPER - II

1. The Indian Economy : Guiding Principles of Indian Economic Policy - Planned Growth and distributive justice - Eradication of poverty, The Institutional frame work of the Indian Economy-Federal Governmental structure-Agricultural and Industrial sectors, public and private sectors, National Income-its sector and regional distribution, Extent and incidence of poverty.
2. Agricultural Production : Agricultural Policy, Land reforms, Technological, Relationship with the Industrial Sector, with special reference to Karnataka.
3. Industrial Production : Industrial Policy, public and private sectors, Regional distribution, control of monopolies and monopolistic practices with special reference to Karnataka.
4. Pricing Policies for agricultural and industrial outputs, Procurement and public Distribution with special reference to Karnataka.
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-with special reference to Karnataka.

Electrical Engineering (Subject Code - 09)

PAPER -1

Network:

Steady state analysis of d.c. and a.c. networks, network theorems. Matrix Algebra, network functions, transient response, frequency response, Laplace transform, Fourier series and Fourier transform, frequency spectral polezero concept, elementary network synthesis.

Statics and Magnetics :

Analysis of electrostatic and magnetostatic fields: Laplace and Poisson Equations, solution of boundary value problems, Maxwell's equations, electromagnetic wave propagation, ground and space waves, propagation between earth station and satellites:

Measurements :

Basic methods of measurements, standards, error analysis, indicating instruments cathode ray oscilloscope; measurement of voltage current, power, resistance, inductance, capacitance time, frequency and flux; electronic meters.

Electronics :

Vaccum and semiconductor devices; equivalent circuits transistor parameters, determination of current and voltage gain, input and output impedances biasing technique, single and multistage, audio and radio small signal and large signal amplifiers and their analysis; feedback amplifiers and oscillators; wave shaping circuits and time base generators, analysis of different types of multivibrator and their uses; digital circuits.

Electrical Machines :

Generation of e.m.f.,m.m.f. and forque in rotating machines; motar and generator characteristics of d.c., synchronous and induction machines, equivalent circuits, Commutation parallel Operation, phase or diagram and equivalent circuits of power transformer, determination of performances and efficiency, autotransformers, 3-phase transformers.

Electrical Engineering

PAPER - II

Section - A: Control Systems

Mathematical modeling of dynamic linear control systems, block diagrams and signal flow graphs, transient reponse steady state error, stability, frequency response Techniques, root locus techniques series compensation.

Industrial Electronics

Principles and design of single phase and polyphase rectifiers controlled rectification, smoothing filters; regulated power supplies, speed control circuits for drivers, inverters, a.c. to d.c. conversion, Choppers; timers and welding circuits.

Section - B (Heavy Currents) Electrical Machines :

Induction Machines - Rotating magnetic field; poly phase, motor; principle of operation; Phaser diagram; Torque slip characteristic; Equivalent circuit and determination of its parameters; circle diagram; starters; speed control, Double cage motor; Induction generator; Theory; Phasor diagram, characteristics and application of single phase motors, Application of two-phase induction motor.

Synchronous Machines - e.m.f. equation phasor and circle diagrams; operation on infinite bus; synchronizing power, operating characteristic and performance by different methods; sudden short circuit and anlysis of oscillogram to determine machine reactances and time constants, motor characteristics and performance methods of starting applications, Special Machines-Amplidyne and metadyne operating characteristics and their applications.

Power Systems and Protection - General layout and economics of different types of power stations; Baseload, peakload and pumped-storage plants; Economics of different systems of d.c. and a.c. power distribution, Transmission line parameter calculation; concept of G.M.D. Short, medium and long transmission Time; Insulators, Voltage distribution in a string of insulators and grading; Environmental effects on insulators, fault calculation by symmetrical components; load flow analysis and economic operation; Steady state and transient stability; Switch-gear methods of are extinction; Restricting and recovery voltage; Testing of circuit breaker, protective relay;s protective schemes for power systems equipment; C.T. and P.T. Surges in transmission lines; Travelling waves and protection.

Utilisation : Industrial drives, electric motors for various drives and estimates of their rating; Behaviors of motor during starting acceleration, braking and reversing operation; Schemes of speed control for d.c. and induction motors.

Economic and other aspects of different systems of railtraction; mechanics of train movement and estimation of power and energy requirements and motor rating characteristics of traction motors, Dielectric and induction heating.

Section - C (Light Currents)

Communication Systems - Generation and detection of amplitude frequency-phase-and pulse-modulate signals using oscillators, modulators and demodulators, Comparison of modulated systems, noise, problem, channel efficiency sampling theorem, sound and vision broadcast transmitting and receiving system, antennas,

feeders and receiving circuits, transmission line at audit radio and ultra high frequencies.

Microwaves - Electromagnetic wave in guided media, wave guide components cavity resonators, microwaves tubes and solid-state devices; microwave generators and amplifiers, filters microwave measuring techniques, micro-wave radiation pattern, Communication and antenna systems. Radio aids to navigation.

D.C. Amplifiers - Direct coupled amplifiers, difference Amplifiers, choppers and analog computation.

(10) Geography (Subject Code -10)

PAPER -1

I Principles of Geography

Section A: Physical Geography

i) Geomorphology : Origin and evolution of the earth's crust; earth movements and plate tectonics; volcanism; rocks, weathering and erosion; cycle of erosion-Davis and Penck fluvial, glacial and marine and karst landforms; rejuvenated and polycyclic landforms.

ii) Climatology -The atmosphere; its structure and composition; Temperature; humidity, precipitation, pressure and wind; jet stream; air masses and fronts; cyclones and related phenomena; comatic classification-Koeppon and Thortwalt; ground water and hydrological cycle.

iii) Soils and Vegetation - Soil genesis, classification and distribution, Biotic successions and major biotic regions of the world with special reference to ecological aspects of savanna and monsoon forest biomes.

iv) Oceanography - Ocean bottom relief; salinity, currents and tides; Ocean deposits and coral reefs; Marine resource-biotic mineral, and energy resources and their utilization.

v) **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 -

i) **Development of Geographical Thought -** contributions of European and Arab Geographers, determinism and possiblism; regional concept system approach, models and theory; quantitative and behavioral revolutions in geography.

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

iii) **Settlement Geography** - Concepts of rural and urban settlements; Origins of urbanization; Rural settlement patterns; central place theory; rank size and primary city distributions; city classifications urban spheres of Influence and the rural urban fringe; the internal structure of cities-theories and cross cultural comparisons; problems of urban growth in the world.

iv) **Political Geography** - Concepts of nation and state; frontiers boundaries and buffer zones; concept of heartland and rimland; federalism; political regions of the world; world geopolitics; resources-development and international politics.

v) **Economic geography** - world economic development and problems, World resources, their distribution and global problems, world energy crisis, the limits of growth. World agriculture, typology and world agricultural regions, Theory of agricultural location, Diffusion of innovation and agricultural efficiency, World food and nutrition problem, World industry; Theory of location of industries, world industry patterns and problems, World trade theory and world patterns.

PAPER - II

Geography of India, with Special Reference to Karnataka

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

Resources Conservation and utilization 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 agricultural regionalization, green revolution, dry zone agriculture, and agricultural land use policy; food and nutrition; Rural economy-animal husbandry, social forestry and household industry.

Industry - History of industrial development, factors of localization; study of mineral based, agro-based and forest based Industries; industrial decentralization and industrial policy; Industrial complexes and Industrial regionalization; Identification of backward areas and rural Industrialisation.

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

Settlements - Rural settlement patterns; urban development in India; Census concepts of urban areas; functional and hierarchical patterns of Indian cities; city regions and the rural - urban fringes; internal structure of Indian cities; town planning, slums and urban housing; national urbanization policy.

Regional Development and Planning - Regional Policies in Indian Five year plans; experiences 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 of 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 reorganization; regional consciousness and national integration; the international boundary of India and related issues; India and Geopolitics of the Indian Ocean.

Law (Subject Code-11)

PAPER -1

I. Constitutional Law of India

1. Nature of the Indian Constitution, the distinctive features of its federal character.
2. Fundamental 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. Religious, Cultural and Educational Rights.
7. Constitutional position of the President and relationship with the 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 Commissions, their powers and functions.
11. Principles of NaturalJustice.
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 States.
15. Trade, Commerce and intercourse of India.
16. Emergency provisions.
17. Constitutional safeguards to civil servants.
18. Parliamentary privileges and immunities.
19. Amendment of the Constitution.

II. International Law

1. Nature of International Law.
2. Sources; Treaty, Custom, General Principles of Law recognized by civilized nations, Subsidiary means for the determination of law, Resolutions of International Organs and Regulations of Specialised Agencies.
3. Relatonship between International Law and Municipal Law.
4. State Recognition and State Succession.

5. Territory of States; modes of acquisition, boundaries, International rivers.
6. Sea, Inland waters, Territorial sea, Contiguous 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, Statelessness; Human Rights and procedures available for their enforcement.
10. Jurisdiction of States; basis of Jurisdiction, immunity from jurisdiction.
11. Extradition 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 resource 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

Law of Crimes and Torts, Law of Crimes

1. Concept of Crime; actus, ream, mens rea, mens 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 (I) Defamation.
3. Protection of Civil Rights Act, 1955.
4. Dowry Prohibition Act, 1961
5. Prevention of Food Adulteration Act, 1954

Law of Torts:

1. Nature of tortuous 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. Define and conversion
10. Defamation
11. Nuisance
12. Conspiracy
13. False Imprisonment and malicious Prosecution.

II. Law of Contracts and Mercantile 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.

Mathematics (Subject Code -12)

PAPER -1

Linear Algebra

Vector space, bases, dimension of a finitely generated space, 'Linear Transformations, Rank and nullity of a linear transformation, Cayley-Hamilton theorem, Eigenvalues and Eigen vectors.

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

Orthogonal, Symmetrical, skew-symmetrical, unitary, Hermitian and skew-Hermitian matrices-their eigenvalues, orthogonal and unitary reduction of quadratic and Hermitian forms. Positive definite quardratic forms, simultaneous reduction.

Calculus:

Real numbers, limits, continuity, differentiability, Mean-value theorem, Taylor's theorem, indeterminate forms, Maxima and Minima, Curve Tracing.

Asymptotes :

Functions of several variables, partial derivatives maxima and minima, Jocobian. 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 polar coordinates, Plane, sphere, paraboloid, Ellipsoid, hyperboloid of one and two sheets and their elementary properties, curves in space, curvature and torsion, Frenet's formulae.

Differential Equations :

Order and Degree of a differential equaltion; differential equation of first order and first degree, variables separable. Homogeneous, linear and exact differential equations. Differential equations with constant coefficients. The complimentary function and the particular integral of e^{ax}, COS^{ax}, sinax, X^m, e^{ax}, Cosbx, e^{ax}, sinbx.

Vector, Tensor, Statics, Dynamics and Hydrostatics

(i) Vector Analysis - Vector Algebra, Differentation and Vector function of a scalar

variable, Gradient, divergence and curl in Cartesian, cylindrical and spherical coordinates and their physical interpretation. Higher order derivaties. Vector identifies and Vector equations, Gauss and Stokes Theorems.

(ii) Tensor Analysis: Definition of a Tensor, transformation of coordinates, contravariant and covariact tensors. Addition and multiplication of tensors, contraction of tensors, Inner product, fundamental tensor, christoffel symbols, covariant differentiation. Gradient, Curl and divergence in tensor notation.

(iii) Statics - Equilibrium of a system of particles, work and potential energy. Friction, Common category. Principles 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. Projectiles. 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 fluids, Equilibirum of fluids under given system of forces. Centre of pressure Thrust on curved surfaces. Equilibrium of floating bodies. Stability of equilibrium and Pressure of gases, problems of relating to atmosphere.

PAPER - II

Section - **A** : Algebra, Real Analysis, Complex Analysis, Partial differential equations.

Section - **B** : Mechanics, Hydrodynamics, Numerical Analysis, Statistics including probability. Operational research.

Algebra : Group, Sub-groups, normal sub-groups, homomorphism of groups, quotient groups. Basic isomorphism theorems. Sylow theorems. Permutation Groups. Cayley's theorem. Rings and ideals, Principal ideal domains, unique factorization domains and Euclidean domains. Field Extensions, finite fields.

Real Analysis: Metric spaces, their topology with special reference to R^n,sequence in a metric space Cauchy sequence, Completeness, Completion, Continuous functions, Uniform Continuity. Properties of continuous functions on Compact sets. Riemann Steiltjes' Integral, Improper intergrals and their conditions of existance. Differentiation of functions of several variables. Implicit function theorem, maxima and minima., Absolute and Conditional Convergence of series of real and Complex terms, Rearrangement 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, Taylor's series, Singularities, Cauchy's Residue theorem and Contour integration.

Partial Differential Equations : Formation of partial differential equations, Types of Integrals of Partial differential equations of first order, Charpits methods, Partial differential equation with constant coefficients.

Mechanics : Generalised Co-ordinates, Constraints, holonomic and non-holonomic systems, D'Alembert's principle and Langranges' 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.

Numerical Analysis : Transcedental and Polynomial Equations: Methods of solution, bisection, regula-false secant and Newton-Raphson and order of its convergence.

Interpolation and Numerical Differentiation: Polynomial interpolation with equal or unequal step size. Spline interpolation - Gubic Splines. Numerical differentiation formulae with error terms.

Numerical Intergration : Problems of approximate quadrative, quadrature formulae with equispaced arguments, Caussian quadrature Convergence.

Ordinary Differential Equations : Euler's method, multisytep Predector-Corrector Methods - Adam's and Milne's method, Convergence and stability, Runge-Kutta methods. Probability and Statistics.

1. Statistical Methods : Concept of statistical population and random sample. Collection and presentation of date. Measure of location and dispersion. Moment and Shepard's corrections. Comulants. Measures of Skewness of 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 intersection etc. Probability - Classical relative frequency and exiomatic approaches, Probability in continnum, Probability space conditional probability and independence, Basic laws of Probability, Probability of combination of events, Bayes theorem, Rondom variable Priobability function, Probability density function, Distribution function, Mathematical expectation, Marginal and conditional distributions, conditional expectation.

3. Probability distributions : Binomial, Poison, Normal Gamma, Beta, Cauchy, Multinmial, Hypergeometric, Negative Bionomial, Chebychev's lemma (Weak) law of large numbers, Central limit theorem for independent and identical varieties. Standard errors, Sampling distribution of to Fand Chi-square and their uses interests of significance. Large sample tests for mean and proportion.

Operational Research :

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

Theory of Queues: Analysis of steady - State and transient solutions for quenqueing system with Fission 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.

History (Subject Code -13)

PAPER-I

Section - A: History of India (Down to A.D. 750)

i. The Indus Civilisation

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

ii. The Vedic Age

Vedic literature, Geographical area known to Vedic Texts, Differences and similarities between Indus civilization and Vedic culture, Political, Social and Economic patterns, Major religious ideas and rituals.

iii The Pre-Maurya Period

Religious movements (Jainism, Buddhism and other sects), Social and economic conditions, Republics and growth of Magadha imperialism.

iv The Maurya Empire

Sources, Rise, Extent and fall of the empire; Administration. Social and economic conditions, Ashoka's policy and reforms.

v. The Post-Maurya period (200 B.C. - 300 A.D.)

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

vi. The Gupta Age

Rise and fall of the Gupta Empire, the vakatakas, Administration, Soceity, Economic, literature, art and religion, Contacts with South East Asia.

vii. Post Gupta Period (500 - 750 A.D.)

Pushyabhutis, The Mukharis, The later Guptas, Harsha Vardhana and his times, Chalukyas of Badami, The Pallavas; Society administration and art. The Arab conquest.

viii. General review of science and technology, education and learning.

Section -B : Medieval India - India 750 A.D. to 1200 A.D.

i. Political and Social conditions; the Rajputs, their polity and social structure, Land structure, and its impact on Society.

ii. Trade and Commerce

iii. Art, Religion and philosophy, Shankaracharya.

iv. Maritime Activities; contacts with the Arabs, Mutual cultural impacts.

v. Rashtrakutas, their role in History - Contribution to art and culture, the Chola Empire-Local Self Government, features of the Indian village system; Society; economy, art and learning in the South.

vi. Indian Society on the eve of Mohmud of Ghanzni's Compaigns; Al-Baruni's observations.

India: 1200-1765

vii. Foundation of the Delhi Sulthanate in Northern India; causes and circumstances; its impact on the Indian Society.

viii. Khilji Imperialism; significance and implications, Administrative and economic regulations and their impact on State and the people.

ix. New Orientation of State Policies and administrative principles under Muhammed bin Tughlaq; Religious policy and public works of Firoz shah.

x. Disintegration of the Delhi Sulthanate; causes and its effects on the Indian Polity and society.

xi. Nature and character of state; political ideas and institutions, Agrarian structure and relations, growth of urban centers, Trade and commerce, condtion of artisans and peasants, new crafts, industry and technology, Indian Medicines.

xii. Influence of Islam on Indian culture, Muslim mystic movements; nature and significance of Bhakti saints, Maharashtra Dharma, Role of Vaisnava revivalist movement; social and religious significance of the chaitanya Movement, impact of Hindu Society on Muslim Social life.

xiii. The Vijayanagar Empire; its origin and growth; contribution to art, literature and culture, social and economic conditions; system of administration; break-up of the Vijayanagar Empire.

xiv. Sources of History; Important chronicles, Inscriptions and Travellers Accounts.

xv. Establishment of Mughal Empire in Northern India, Political and Social conditions in Hindustan on the eve of the Babur invasion; Babur and Humanyun, Establishment of the Portuguese control in the Indian ocean, its political and economic consequences.

xvi. Sur Administration; political; revenue and military administration.

xvii. Expansion of the Mughal Empire under Akbar; political unification; new concept of monarchy under Akbar, Akbar's religo-political outlook; Relations with the non-Muslims.

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

xix. Political Ideas and Institutions, Nature of the Mughal State, Land Revenue Administration; the Manasabdari and the Jagirdari systems, the land structure and the role of Zamindars, agraraian relations, the military organization.

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

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

xxii. Hindu-Muslim relations; trends of integration; composite culture (16^{th} to 18^{th} centuries)

xxiii. 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, causes and effects; emergence of the Maratha confederacy; its structure and role.

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

PAPER - II

Section - A: Modern India (1757-1947)

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, Emergence of Hyder and Tipu on Political scene, of Mysore -Anglo Mysore and Mysore Nizam relations.

2. Evolution of British Paramountcy over princely States, Restoration of Odeyar rule at Mysore.

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. Effects at regeneration of Indian society - Socio-religious movements; social, religious, political and economic ideas of the reformers 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 peasant Revolts with special reference to Indigo revolt, Deccan riots and Mapplla Uprising.

7. Rise and growth of Indian National Movement; Social basis of Indian nationalism, policies and programme of the early nationalist and militant nationalists, militant revolutionary group terrorists, Rise and Growth of communalism, Emergence of Gandhiji in Indian politics and his techniques of mass mobilization; Non-co-operation, Civil disobedience and Quit India Movement; Trade Union and peasant movements State (s) People movements; Rise and growth of Left-wing within the congress-The Congress Socialists and Communists; British official response to National Movement. Attitude of the Congress to Constitutional changes, 1909-1935; Indian National Army. Naval Mutiny of 1946; The partition of India and Achievement of Freedom.

8. Annexation and rendition of Mysore, The Diwans of Mysore, Independence movement in Mysore and Mysore congress, Quit India, Issor Mysore Chalo Movement. State re-organisation Commission; Literary movement in Karnataka; Backward Class Movement; Havanur report and its implications.

Section - B : World Hlstoy -1500 to Present

1. The Foundations of the modern world, The legacy of classical antiquity and the middle ages, Impact of the renaissance and reformation, Commercial revolution, Failure of the Spanish empire, Westphalia as a 'turning point'.

2. The age of absolutism; Break-up of the feudal system, Louis XIV and Colbertism, The Ideal of grand monarchy, Failure of absolutism in England. Absolutism in Parssoa Austria, Commercial and Colonial rivalries and the European Wars, The war of the Spanish Succession, the diplomatic revolution and the seven years war, Partition of Poland, Absolutism in Eastern Europe, Peter the Great and Catherine-ll.

3. The New Society, Merchantalism and Laissez-faire, the rise of the middle class, new trends in literature and arts, scientific revolution, Newton, Descartes, Political thought of Hobbes and Lock, the widening horizon of Western Civilisation, contacts with the African, Asiatic and American Worlds.

4. The beginning of Enlightement, The idea of progress, Voltaire and the Environment of Reason, Rousseau and Montesquieu, Diderot and the Encyclopedia, Burke and Be Maistre. The French Philosophers, the academies, and journals and the dissemination of knowledge, the character of enlightenment.

5. The American and French revolutions, Their significance and message, the Vienna settlement and the age of reaction, Romantic revival, Hegel and German Idealism, The Victorian era in England, Bourgeois liberalism.

6. The industrial revolution, Growth of the factory system, The classical economist and utilitarian philosophers, the revolutions of 1830/32 and 1848 Utopian-socialism, Karl marx's scientific socialism, Working class movements, and social legislations, Nationalism in Europe, Unification of Italy and Germany, Civil war in America, Colonialism in Afro-Asian countries, Cases of China and Japan. The Ottoman empire.

7. Neo-lmperialism in Europe, The Eastern question, Partition of Africa, The formation of the Triple Alliance, The welding of the Entente Europe in two camps.

8. The First World War, Paris peace conference , League of Nations; New trends in cultural fields, Darwin, Einstein and Froud, Philosophical Reflections of the theories of evolution, relativity and quantum mechanics, New trends in literature.

9. The Russian revolution, Socialism in one country, Fascism in Italy, Nazism in Germany, The great depression, milestones to the second world war.

11. U.N.O. Cold war, Afro - Asian resurgence, Detente, The Contemporary scene. Star Wars, Gorbachev, Glasnost and Perestroika, Collapse of U.S.S.R. and process of Globalisation.

Mechanical Engineering (Subject Code -14)

PAPER-I

Statics : Equilibrium in three dimensions suspension cables principle of Virtual work.

Dynamics : Relative motion coriolis force Motion of a rigid Body. Gyroscopic motion impulses.

Theory of Machines: Higher and lower parts, inversions, steering mechanisms, Hooks joint, velocity and acceleration of a links, interia forces. Cams conjugsts action of gearing and interference, gear trains epicyclic gears. Clutches, belt drives, brakes, dynamometers, Flywhells Governors, Balancing of rotating and reciprocating masses and multicylinder engines. Free, forced and damped vibrations for a single degrees of freedom. Degree of freedom. Critical speed and whirling of shafts.

Mechanics of Solids : Stress and strain in two dimensions. Mohr's circle, Theories of failure, Defluction of beams. Buckling of colomns, Combined bending and torsion. Castiglapp's theorem, Thick cylinders Rotating disks. Shrink fit. Thermal Stresses.

Manufacturing Science : Merchants theory Taylors equation. Machineability. Unconventional machining methods including EDM, ECM and ultrasonic machining, Use of Lasers and plasms. Analysis of forming processes. Higher velocity forming. Explosive forming. Surface roughness, gauging comparators. Jigs and Fixtures.

Production Management : work simplification, work sampling, value engineering, Dine balancing, work station design, storage space requirement, ABC analysis, Economic order, quantity including finite production rate. Graphical and simplex methods for linear programming; transportation model, elementary queing theory, Quality control and its, uses in product design. Use of X.R.P. (Sigma) and C. charts. Single sampling plans, operating characteristics curves. Average Sample size. Regression analysis.

PAPER - II

Thermodynamics : Applications of the first and second laws of thermodynamics. Detailed analysis of thermodynamic cycles.

Fluid Mechanics : Continuity momentum and energy equations. Velocity distribution in laminar and turbulent flow. Dimensional analysis. Boundary layer on a flat plate. Adiabatic and isentrophic flow. Mach number.

Heat Transfer: Critical thickness of insulation conduction in the presence of heat sources and sinks. Heat transfer from fins. One dimensional unsteady conduction time constant for thermocouples. Momentum and energy equations for boundary layers on a flat plate. Dimensionless numbers Free and Forced convection. Boiling and

condensation. Nature of radiant heat. Stefan-Foftsmann Law. Configuation factor logarithmic mean temperature difference. Heat exchanger effectiveness and number of transfer units.

Energy Conversion : Combustion phenomenon in C.I. and S.I. engine Carburation and fuel injection. Selection of pumps, Classification of hydraulic turbines, Specific speed. Performance of compressor. Analysis of stead and gas turbines. High pressure boilers. Unconventional power systems. Including Nuclear power and MHD systems. Utilisation of solar energy.

Environmental Control : Vapour compression, absorption, steam jet and air refrigeration systems. Properties and characteristics of important refrigerants. Use of psychrometric chart and comfort chart. Estimation of cooling and heating loads. Calculation of supply air state and rate. Air-conditioning plants layout.

Philosophy (Subject Code-15)

PAPER-I

Metaphysics and Epistemology

Candidates will be expected to be familiar with theories and types of Epistemology and Metapysics-Indian and Westem-with special reference to the following :

(a) Western - . Idealism; Realism; Absolutism; Empiricism, Rationalism; Logica; 'L' Positivism; Analysis; Phenomenology; Existentialism and pragmatism.

(b) Indian- Pararnans and Paramanys; Theories of truth and error; Philosophy of Languge of Meaning Theories of reality with reference to main system (Orthodox and Heterdox of Philosophy).

PAPER-II

Socio-Political Philosophy and Philosophy of Religion.

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

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 Sathyagraha.

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 Budhism, Jainism, Hinduism, Islam, Christianity and Sikhism.

   a) Theology and Philosophy of Religion.

   b) Foundations of religions belief Reason Revelation Faith and Mysticism.

   c) God, Immortality of Soul, Liberation and Problem and Evil and Sin.

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

6. Moksha-Paths leading to Moksha.

Geology (Subject Code -16)

PAPER-I

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

(I) 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.

(II) 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, drainage systems, Geomorphic features of Indian subcontinent.

(III) Structural Geology :

Stress and strain ellipsoid, and rock deformation. Mechanics of folding and faulting. Linear and planer structures and their genetic significance, Petrofatric analysis, its Graphic representation and application to geological problems, Tectonic frame work of India.

(IV) 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 brachiopods, bivalves, gastropods, ammonids, 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.

(V) 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 formations 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, Paleogeographic reconstitutions.

PAPER - II

(Crystallography, Mineralogy, Petrology and Economic Geology)

(I) 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.

(II) Optical Mineralogy :

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

(III) Mineralogy :

Elements of crystal chemistry-types of bondings, ionic radi-coordination number. Isomorphism polymorphism and pseudomorphism, Structural classification of silicates, Detailed study of rock-forming minerals-their physical Chemical and optical properties, and uses, if any, study of the alternation products of these minerals.

(IV) Petrology :

Magma, its generation, nature and composition, Simple-phase diagrams of binary and tertiary system and their significance, Bowen's Reaction Principle, Magmatice differentiation; assimilation, Textures and structures and their petrogenetic significance, Classification of igneous rocks, Petrography and petrogenesis of important rock-types of India; granites and granites charnockites and charnockites, Deccan basalts.

Processes of formation of sedimentary rocks, Diagenesis and lithification, Textures and structures and their significance, Classfication of sedimentary rocks, clastic and non-clastic. Heavy minerals and their significance, Elementary concept of

depositional environments, sedimentary facis and provenance, Petrography of common rock types.

Variable of metamorphism, Types of metamorphism, Metamorphic grades, zones and fades, ACF, AKF and AEM diagrams, Textures, structures and nomenclature of metamorphic rocks, Petrography and petrogenesis of important rock types. V) Economic Geology:

Concept of ore, ore mineral and gangue; tenor or ores, processes of formation of mineral deposits, common forms and structures of ore deposits, classification of ore deposits, Control of ore deposition Metalloginitic epochs, Study of important metallic and non-metallic deposits, oil and natural gas fields, and coal fields of India, Mineral wealth of India, Mineral economics, National Mineral policy, Conservation and utilization of minerals. (VI) Applied Geology:

Essentials of prospecting and exploration techniques, Principal methods of mining, sampling, ore dressing and benefication, Application of Geology in Engineering works. Elements of soil and groundwater geology and geochemistry, Use of aerial photographs in geological investigations.

Physics (Subject Code -17)

PAPER -1

Mechanics, Thermal Physics and Waves and Oscillations

1. Mechanics:

Conservation Laws, Collision impact parameter, scattering cross-section, centre of Mass and Lab systems with transformations 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, Torque and Procession of top, Gyroscope, Central forces Motion under universe square law, Kepler's Laws, Motion of Satellites (including geostationary). Galiliean Relativity, Special theory of relativity, Micheison-Morley Experiment, Lorentz Transformations - addition theorem of velocities. Variation of mass with velocity, Mass-energy equivalence. Fluid dynamics, streamlines, turbulence, Bernouili's Equation with simple application.

2. Thermal Physics :

Laws of Thermo dynamics, Entropy, Carnot's cycle, Isothermal and Adiabatic changes. Thermodynamic Potentials, Maxwell's relations, the clausius-Clapeyron equation, reversible cell, Joule-Kelvin effect, Stefan-Boltsmann Law. Kinetic theory of Gases, Maxwell's Distribution Law of velocities. Equipartition of energy. Specific heats of gases, mean free path, Brownian Motion, Black Body radiation specific heat of solids, Enstein & Debye's theories, Wein's Law, Planck's Law, Solar Constant, Thermalionization and Stelar Spectra. Production of low temperature using adiabatic demagnetization and dilution refrigeration, Concept of negative temperature.

3. Waves and Oscillations :

Oscillations, Simple harmonic motion, stationary and traveling waves, Damped harmonic motion, Forced oscillation and Resonance, Wave equation, Harmonic Solutions, Plane and spherical waves, Super position of waves. Phase and Group velocities, Beats, Huygen's Principle, Interference, Diffraction-Fresnel & Fraunhofer. Diffraction by straight edge, single and multiple slits. Resolving power of grating and Optical Instruments. Rayleigh's, Criterion, Polarization; Production and Detection of polarized light (linear, circular and elliptical) Laser sources (Helium, Neon, Ruby and semi conductor diode). Concepts of spatial and temporal coherence. Diffraction as a Fourier Transformation. Fresnel and Fraunhofer diffraction by rectangular and circular apertures. Holography; theory and applications.

Paper - II

Electricity & Magnetism, Modern Physics and Electronics

1. Electricity & Magnetism :

Coulomb's Law, Electric field. Gauss's law, Electric potential. Poisson and Laplace equations for a homogeneous dietectric, uncharged conducting plane. Magnetic Shell. Magnetic induction and field strength. Biot-Savart's law and applications. Electromagnetic induction,Faraday's and Lenz's laws, Self and Mutual Induction. Alternating currents. L.C.R. circuits, series and parallel resonance circuits, quality factor, Kirchoff's laws with applications. Maxwell's equations and electromagnetic waves. Transverse nature of electromagnetic waves, Poynting vector. Magnetic fields in matter dia-para, ferro antiferro and ferri magnetism (qualitative approach only).

2. Modern Physics :

Bohr's theory of hydrogen atom. Electron spin. Optical and X-ray Spectra. Stern-Gerlach experiment and coaxial quantization. Vector model of the atom, spectral terms, fine structure of spectral lines. J-J and L-S coupling Zeeman effect. Pouli'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. De Brogile waves. Wave-Particle duality and uncertainity principle. Schrodinger wave equation with application to (i) Particle (ii) Motion across a step potential, one dimensional harmonic oscillator eigen values and eigen functions. Uncertainity principle Radioctivity. Alpha, beta and gamma radiations. Elementary theory of the alpha decay. Nuclear binding energy. Mass spectroscopy, Semi empirical mass formula. Nuclear fission and fusion. Nuclear Reactors. Elementary particles and their classification. Strong and Weak Electromagnetic interactions. Particle accelerator; cyclotron, Leniar accelerators, Elementary ideas of Superconductivity.

3. Electronics :

Band theory of solids - conductors, insulators and semi-conductors, Intrinsic and extrinsic semi-conductors. P-N junction. Thermistor, Zener diode, 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 receiver. Television. Logic Gates.

Political Science Relations and International Relations (Subject Code -18)

PAPER-I

Section-A: Political Theory

1. Main features of ancient Indian Political thought; Manu and Kautilya; Ancient Greek thought; plato, Artistotle; General Characteristics of European medieval political thought: St. Thomas Aquinas, Marsiglio of padua; Machiavelli; Hobbes, Locke, Montesquieu, Rousnenu, Eenthan, J.S. Kill T.H. Green Hegal, Mark, Lenin and MaoTse-Tung.
2. Nature and scope of Political science; Growth of Political Science as a discipline. Traditional Vs. Con-temporary approaches; Behaviouralism and Post-Behavioural developments; Systems theory and other recent approaches to political analysis, Marxist approach 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 Fabian) Marxian-Socialism; Fascism.

Section - B : Government and Politics

1. Approaches to the study of Comparative Politics; Traditional and structural Functional approach.
2. Political Institutions: The Legislature, Executive and Judiciary; Parties and Pressure-Groups, Theories of Party system; Lenin Michels and Duverger; Electoral system.Bureaucracy - Weber's views and modern critics of wever.
3. Political Process; Political Socialization, modernization 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 Nauroji, Gokhale, Tilak, Sri Aurobindo, Iqbal, Jinnah, Gandhi, B.R. Ambedkar, M.N. Roy and Nehru, b) The structure : Indian Constitution, Fundamental Rights and Directive Principles; Union Government; Parliament, Cabinet, Supreme Court and Judicial Review; Indian Federalism Centre-State relations; State Government role of the Governor; Panchayath 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 Participation; Planning and Developmental Admlnstration Socio-economic changes and its impact on Indian democracy.

PAPER-II

Part-I

1. The nature and functioning of the Soverign nation state system
2. Concepts of International Politics; Power; National interest; Balance of Power 'Power Vaccum',
3. Theories of International Polities; The Realist theory; Systems theory; Decision making.
4. Determinations 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 Universalism (Pax-Britiannica, Pax Americana - Pax - Sovietica); The "Middle Kingdom" Complex of China; Non-Alignment.
6. The Cold War; Origin, evolution 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 crisis in energy resources.
10. The Role of international law in international relations; the International Court of Justice.
11. Origin and Development of International Organisations; the United Nations and specialized Agencies; their role in international relations.
12. Regional Organisation : OAS, OAU, the Arab league, 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, “Cultural imperialism” Covert intervention by the major powers.

Part - II

1. The uses and mis used of nuclear energy; the impact of nuclear weapons on international relations; the Partial Test-Ban Treaty; the Nuclear Non-Proliferation Treaty (NPT), peaceful Nuclear explosions (PNE).
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 nation as and outside.
7. 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.

Psychology (Subject Code -19)

PAPER -1

Foundations of 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 characteristics of psychological measurement.
3. The nature, origin and developments of human behaviour, Heredity and environment. Cultural factors and behaviour, the process of socialization, Concept of National Character.
4. Cognitive Processes: Perception, Theories of perception, Perceptual organization, Person perception. Perceptual defence. Transactional approach to perception. Perception and Personality. Figural after-effect, Perception styles, Perceptual abnormalities, Vigilance.
5. Learning : Cognitive, Operant and Classical conditioning approaches, Learning Phenomena. Extinction, Discrimination and generalization, Discrimination learning, Probability learning, Programmed learning.
6. Remembering: Theories of remembering, Short-term memory, Long-term memory, Measurement of memory, Forgetting, Reminiscence.
7. Thinking : Problem solving, concept formation, Strategies of concept formation, Information processing, Creative thinking, Convergent and Divergent thinking, Development of thinking in children, theories.
8. Intelligence : Nature of intelligence, Theories of intelligence, Measurement of intelligence, Measurement of creativity Aptitude, Measurement of aptitudes. The concept of social intelligence.
9. Motivation : Characteristics of motivated behaviour, Approaches to motivation, Psycho-analytic theory. Dirve 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; Questionnaries Rating Scales, Psychometric Tests; Protective Tests; Observation method.

11. Language and Communication : Psychological basis of language. Theories of language development, Skinner and Chomsky, Non-verba communication. Body language, Effective communications; Source and receiver characteristics. Persuasive communications.

12. Attitudes and values : Structure of attitudes, Formation of Attitudes. Theories of attitudes, Attitude 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, , stimulation studies in psychology, Study of consciousness; Sleep, dream, meditation and hypnotic 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 Difference :

Measurement of individual differences. Types of psychological tests. Construction of psychological tests. Characteristics of a good psychological test. Limitation of psychological test.

2. Psychological Disorders

Classifications of Disorders and nosological systems. Neurotic, psychotic and psychophysiologic disorders. Psychopathic personality, Theories of psychological disorder. The problem of anxiety, depression and stress.

3. Therapeutic Approaches:

Psychodynamic approach. Behaviour therapy. Clientcentered therapy. Cognitive therapy. Group therapy.

4. Application of psychology to Organisational and Industrial Problems

Personnel selection, Training, Work motivation, Theories of Work motivation. Job designing. Leadership training. Participatory management.

5. Small Groups

The concept of small group. Properties of groups. Group at work. Theories of group behaviour. Measurement of group behaviour. Interaction process analysis. Interpersonal 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 for change. The Concept of change-proneness.

7. Psychology and the Learning Process:

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

8. Disadvantaged Groups

Types : Social, Cultural and economic, Psychological consequences of disadvantage. 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 prejudice. Nature of prejudice. Manifestations of prejudice. Development of prejudice. Measurement of prejudice. Amelioration of prejudice. Prejudice and personality. Steps to achieve social integration.

10. Psychology and Economic Development.

The nature of achievement motivation. Motivating people for achievement. Promotion of entrepreneurship. The Entrepreneus 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 of stress. Alcoholism and Drug Addiction. The Socially Deviant. Juvenile Delinquency. Crime Rehabilitation of the deviant. The problem of the aged.

Public Administration (Subject Code -20)

PAPER -1

I. Administrative Theory

Basic Premises, Meaning, Scope and signification of Public administration; Private and Public administration; its role in developed and developing societies; Ecology of administration-Social, economic, cultural political and legal; Evolution of Public administration as a discipline; Public Administration as an art and a Science; New Public Administration.

II Theories of Organisation : Scientific management (Taylor and his associates); The Bureaucratic theory of organization (Weber) Classical theory of Organisations (Henri Favol, Luther Gulic and others); The Human Relations Theory of Organisations (E1 on Maye and his Colleagues); Behavioural approach, Systems Approach; Organisational Effectiveness.

III. Principles of Organisation: Hierarchy, Unity of Command, Authority and Responsibility, Co-ordination, Span of Control, Supervision, Centralization and decentralization, delegation.

IV. Administrative Behaviour : Decision making with Special-Reference to the contribution of Herber Simon. Theories of Leadership; communication; Morale; Motivation (Maslow and Herzberg)

V. Structure of Organisations : Chief Executive; Types of Chief Executive and their functions; Line, Staff and Auxiliary agencies; Departments; Corporations, Companies, Boards and Commissions. Head-quarters and field relationship.

VI. Personnel Administration: Bureaucracy and Civil Services; Position Classification; Recruitment; Training; Career Development; performance Appraisal; Promotion; pay and Service Conditions Retirement Benefits; Discipline; Employer-Employee Relations, Integrity in Administration; Generalists and Specialists Neutrality and Anonymity.

VII. Financial Administration : Concept of Budget, Preparation and Execution of the Budget; Performance Budgeting; Legislative Control, Accounts and Audit.

VIII. Accountability and Control : The Concepts of Accountability and Control; Legislative Executive and Judicial Control over Administration, Citizen and Administration.

IX. Administrative Reforms: O & M; Work Study, Work Measurement; Administrative Reforms; Processes and Obstacles.

X. **Administrative Law** : Importance of Administrative Law; Delegated Legislation; Meaning, Types, Advantages, Limitations, Safeguards, Administrative tribunals.

XI. **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 Socio-Cultural Context of Development Administration. The concept of Administrative Development.

XII. **Public Policy** : Relevance 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** : Constitution, Parliamentary, Democracy, Federalism Planning, Socialism.

III. **Political Executive at the Union Level :** President, Prime Minister, Council of Ministers, Cabinet Committees.

IV. **Structure of Central Administration :** Secretariat, Cabinet Secretariat, Ministeries 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 Civil Services.

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

VIII. **Public Undertakings** : Forms, Management, Control and Pror

IX **Control of Public Expenditure** : Parliamentary Control; Role of the Finance Ministry; Comptroller and Auditor General.

X **Administration of Law and Order :** Role of Central and State Agencies in Maintenance of Law and Order.

XI **State Administration** : Governor; Chief Minister; Council of Ministers; Secretariat, Chief Secretary, Directorates.

XII. District and Local Administration : Role and Importance; District Collector; land and revenue, law and order and developmental functions. District Rural Development Agency; Special Development Programmes.

XIII. Local Administration: Panchayath Raj; Urban Local Governor gestures, Forms, Problems, Autonomy of Local Bodies.

XIV. Administration for Welfare : Administrator for the Welfare of weaker Sections with particular Reference to Scheduled Caste Scheduled Tribes and Programmes for the Welfare of Women.

XV. Issue Areas In Indian Administration : Relationship between Political and Permanent Executives. Generalists and Specialists in Administration. Integrity in Administration, People's Participation in Administration. Redressal of Citizens Grievances. Lok Pal and Lokayuktas, Administrative Reforms in India.

Sociology (Subject Code-21)

PAPER -1

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 date collection and measurement including participant and non-participant observation, interview schedules and questionnaires and measurement of attitudes.

Pioneering contributions to sociology. The seminal ideas of Durkheim, Weber, Redoliffe-brown, Malinowski, Parsons, 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, protectant ethnic and the spirit of capitalism, ideal types.

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

Social stratification and mobility, Ineruality 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 economic system, industrialization and changes in the political, educational, religious, familiar and stratification spheres, social determents and consequences of economic development.

Political System : The nature of social power community power structure; power of the elite, class power, organization power, power of unorganized masses, power authority and legitimacy, power it democracy and ittotalitarian society, political parties and voting.

Educational System : 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 modernization.

Religion : The religions phenomenon, the sacred and the profane, social functions and dysfunctions of religion, magic religion and science, changed in society and changes-in religion secularization.

Social Change and Development : Social structure and social change, continuity and change as fact and as value, proceses of change, theories of change, social disorganization and social movement, types of social movements, directed social change, social policy and social development.

PAPER - II

Society of India

Historical of the Mid Society : Traditional Hindu social organization, sociocultural dynamics through the ages, especially the impact of Budhism, and the modern West.factors in continuity and change.

Social : Caste system and its transformation aspects of ritual, economic and caste statis, 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 Castes, untouchability and its eradication; agrarian and industrial class structure.

Family, Marriage and Kinship : Regional variation in kinship systems and its sociocultural correlates changing aspects of Kinship, the joint family - its structural and functional aspects and its changing form and disorganization, marriage among different ethnic groups and economic categories, its changing trend and to future; impact of legislation and socio economic change upon family and marriage, intergenerations gap and youth unrest; changing status of women.

Economic System: The jainmani system and its bearing on the traditional society, market economy'and its social consequences, occupational diversification and social structure profession trade unique, 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 modem contexts, educational inequality and change, education and social mobility, educational problems of women, the Backward Classes and the Scheduled Castes.

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

Tribal Societies and their Integrations : Distinctive feature 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 the Greed Revolution, New strategies to rural development.

Urban Social Organisation : Continuity and change in the traditional cases of social organization, namely, kinships, caste and religion in the urban context, stratification and mobility in urban communities, ethnic diversity and community integration, urban neighbourhoods, rural urban differences in demographic and sociocultural characteristics and their social consequences.

Population Dynamics: Socio-cultural aspects of sex and age structure, marital status, fertility and mortality, the problem of population explosion, social, psychological, cultural and economic factors in the adoption of family planning practices.

Social change and Modernization : Problems of Role Conflict Youth unrest-intergenerational gap changing Status of Women, Major Sources of social change and of Resistance to change, impact of West, reform movements, social movements industrialization and urbanization, pressure groups factors of planned change, Five Year Plans legislative and executive measures, process of change, Sanskritization, esternization 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.

Statistics (Subject Code-22)

PAPER-I

I. Probability:

Sample space and events, probability measure and probability space, Statistical Independence, Random variable as a measurable function, Discourteous and continuous random variables, Probability density and distribution functions, marginal and conditional distribution functions of random variables and their distributions, expectations and movements, conditional expectation, correlation coefficient; convergence in probability in LP almost everywhere, Markov, Chebychev and Kolmogrov inequalities, Borel Cantelli Lemma, weak and strong law of large numbers probability generating and characteristic functions. Uniqueness and continuity theorems. Determination of distribution by moments. Liderbery-Devy Central limit theorem. Standard discrete and continuous probability distributions, their interrelations including limiting cases.

II. Statistical Inference :

Properties of estimates, consistency, unbiasedness, efficiency, sufficiency and completeness. Cramer-Rao bond, Minimum variance unbiased estimation, Rao-Blockwell and Lehmann Sheffe's theorem methods of estimation by moments maximum likelihood, minimum Chi-square. Properties of maximum likelihood estimators confidence intervals for parameters of standard distribution.

Simple and composite hypotheses, statistical tests and critical region, two kinds of error, power function unbiased tests, most powerful and uniformly most powerful tests Neyman Person Lemma, optimal tests for simple hypotheses concerning one parameter, monotones likelihood ratio property and its use in constructing UMP tests, likelihood ratio criterion and its asymptotic distribution, Chi-square and Kilmogoro tests for goodness of fit. Run test for randomness Sign test for Location, Wilcoxon Mann-Whitney test and Kologor-Smirnov test for the two sample problem. Distribution free confidence intervals for quantities and confidence band for distribution function.

Notions of a sequential test, Walds SPRT, its Cc and ASN function.

III. Linear Inference and Multivariate Analysis:

Theory of least squares and Analysis of variance, Qauss-Markoff theory, normal equations, least squares estimates and their precision. Tests of significance and Intervals estimates based on least square theory in one way, two way and three way classified date. Regression Analysis, linear regression, estimates and test about correlation and regression, estimates and tests about correlation and regression coefficient curve linear regression and orthogonal polynomials, test for linearity of regression Multivariate normal distribution, multiple regression, Multiple and partial

correlation, Mahalanoblis D2 and Hotelling T2-statistics and their applications (derivations of distribution of D2 and T2 excluded) Fisher's discriminant analysis.

PAPER - II

I. Sampling Theory and Design of Experiments.

Nature and scope of Sampling, simple random sampling, sampling from finite populations with and without replacement, estimation of the standard errors sampling with equal probabilities and PPS Sampling. Stratified random and systematic sampling two stage and multistage sampling. Multiphase and cluster sampling schemes.

Estimation of population total and mean, use of biased and unbiased estimates auxiliary variables, double sampling standard errors of estimates cost and variance functions ratio and regression estimates and their relative efficiency. Planning and organization of sample surveys with special reference to recent large scale surveys conducted in India.

Principles of experimental designs, CRD, RED, LSD, missing plot technique factorial experiments 2n and 3n design general theory of total and partial confounding and fractional replication. Analysis of split plot, BIB and simple lattice designs.

II. Engineering Statistics :

Concepts of quality and meaning of control. Different types of control charts like X-R charts, P charts np charts and cumulative sum control charge.

Sampling inspection Vs 100 percent inspections. Single, double, multiple and sequential sampling plans for attributes inspection, CC, ASM, and ATI, curves, Concept of producer's risk and consumer's risk. AQL, AQQL, LTPD etc. Variable sampling plants.

Definition of Reliability, maintainability and availability. Live distribution failure rate and both-tub, failure curve exponential and Welbull model. Reliability of series and Parallel systems and other simple configurations. Different types of redundancy like hot and cold and use of redundancy In reliability Improvement problem In life testing, censored and truncated experiments for exponential model,

III. Operational Research :

Scope and definition of OR different types of models, their construction and obtaining solution.

Homogenous discrete time Markov chains, transition probability martris, classification of states and ergodic theorems. Homogenous continuous time Markov chains. Elements of queuing theory, M/M/I and M/M/K queues, the problem of machine interference and GI/M/I and M/GI queues.

Concept of Scientific inventory management and analytical structure of inventory problems Simple models with determinist and stochastic demand with and without leadtime. Storage models with particular reference to dam type.

The structure and formation of a Linear programming problem.

The simplex procedure two phase methods and charnes - Method with artifical variables. The quality theory of liner programming and its economic interpretation Sensitivity analysis.

Transportation and Assignment problems.

Replacement of items that fail and those that deteriorate group and individual replacement policies.

Introduction to computers and elements of Fortran IV programming formats for input and output statements specification and logical statements and sub-routines. Application to some simple statistical problems.

IV. Quantitative Economics :

Concept of time series, additive and multiplicative models, resolution into; four components, determination of trend by freehand drawing, moving averages, and fitting of mathematical curves, seasonal indices and estimate of the variance of the random components.

Definition, construction, interpretation, and limitations of index numbers, Lespeyre Parsche Edgewoth Marshall and Fisher index numbers their comparisons tests for Index numbers and construction of cost of living index.

Theory and analysis of consumer demand - specification and estimation of demand function. Demand elasticities. Theory of production, supply functions and elasticities, input demand functions. Estimation of parameters in single equation model, classical least squares, generalized least squares, heterscedasticity, serial correlation, muticollinearity, errors in variables model, simultaneous equation models-identification, rank and order conditions.

Indirect least squares and two; sage least squares. Short-term economic forecasting.

V. Demography and Psychometry:

Sources of demographic data : census registration : NSS and other demographic surveys. Limitation and uses of demographic data.

Vital rates and ratios : Definition, construction and uses.

Life tables, complete and abridged : construction of life tables from vital statistics and census returns, Uses of life tables.

Logistic and other population growth curves. Measure of fertility, Gross and net reproduction rates.

Stable population theory, Uses of stable, and quasistable population techniques in estimation of demographic parameters.

Mormidity and its measurement standard classification by cause of death. Health surveys and use of hospital statistics.

Educational and psychological statistics methods of Standardisation of scales tests, IQ tests, reliability of test and T and Z scores.

Zoology (Subject Code -23)

PAPER-I

Non Chordata and chordata, Ecology, Ethology, Bio-Statistics 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, blonomlca and life history Parameceium, monocystis, malarial parasite, trypanasoma and Leishmania, Locomotion, nutrition and reproduction In protozoa.
3. Porifera : Canal system, Skeleton and reproduction.
4. Coelenterata : Structure and life history of Obelia and Aurelia. Polymorphism in Hydrozoa, coral formation, metagenesis, Phylogenetic relationship of cnidaria and acnidaria.
5. Helminthes : Structures and life history of Planaria, Fasciola, Taenia and Ascaris. Parastic adaptation, Helminthes in relation to man.
6. Annelida : Nerieis, earthworm and leech; coelom and metamerism, modes of life in polychaetes.
7. Arthropods : Palaemon, Scorpion, cockroach, larval forms and parasitism in Crustacea, mouth parts, vision and respiration in arthropods, social life and metamorphosis in insects. Importance of Peripatus.
8. Mollusca : Unio Pila, oyster, culture and pearl formation, cephalopoda.
9. Echinodermata - General organization, larval forms and affinities of Echinodermata.
10. General organization and characters, outline classification and inter-relationship of protochordeta, Pisces, Amphibia, Reptilia, Aves and Mammalia.
11. Neotony and retrogressive 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 andApoda.
15. Origin of Reptiles, Adaptive radiation in reptiles, fossil reptiles, poisonous and non poisonous snakes of India, poison apparatus of snake.
16. Origin of birds, flightless birds, aerial adoptation and migration of birds.

Section - B : Ecology, Ethology, Biostatics and Economic Zoology. Ecology:

1. Environment: Abiotic factors and their role, Biotio Factor* Inter and Inter - specific relations,
2. Animal: Organisation at population and community levels, ecological successions.
3. Ecosystem: Concept, components, fundamentals operation, energy flow, biogeo-chemlcal cycles, food and trophic 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 harmones and phermones in behaviour
9. Choronobiology, Biological clock, seasonal rhythms, tidal rhythms.
10. Neuro-endocrine control of behaviour.
11. Methods of studying animals behaviour. **Bio Statistics**
12. Methods of sampling, frequency distribution and measures of central tendency, standard deviation, standard error and standard deviance, correlation and regression and Chi-square and t-test.

Economic Zoology

13. Parasitism, commensalisms & host parasite relationship
14. Parasitic protozoan's helminthes and insects of man and domestic animals.
15. Insect pests of crops and stores products.
16. Beneficial insects.
17. Pisciculture and induced breeding.

PAPER - II

Cell biology, Genetics, Evolution and Systematics, Biochemistry Physiology and Embryology.

Section 'A': Cell Biology, Genetics, Evolution and systematics.

1. Cell Biology - Structure and function of Cell and Cytoplasmic constituents, structure of nucleus, plasma membrane, mitochondria, golgibodies, endo-plasmic reticulum and ribosomes, cell division, mitotic spindle and chromosome movements and meiosis.Gene structure and Function ; Watson-Crick model of DNA, Replication of DNA Genetic code, protein synthesis cell differentiation sex chromosomes and sex determination.

2. Genetics:Mendelian laws of inheritance, re-combination, linkage and linkage maps, multiple, alleles; mutation (natural and induced), mutation (and evolution, Meiosis, chromosome number and form, structural rearrangements; polyploidy, cytoplasmic, inheritance, regulation of gene expression in prokaryotes and eukaryotes, biochemical genetic, elements of human genetics; normal and abnormal karyotypes, genes and diseases, Eugenics.

3. Evolution and systematics - Origin of life history of evolution through Lamarck and his works. Darwin and his works sources and nature of organic variation, Natural selection, Hardy-Weinberg law, cryptic and warning, colouration mimicry, Isolation mechanism, and their role. Fauna, concept of species and sub species, principles of classification, zoological nomenclature and international code. Fossils, outline of geological eras phylogeny of horse, elephant, camel, .origin and evolution of man, principles and theories of continental distribution of animals, zoogeographical realms of the world.

Section 'B': Biochemistry, Physiology and Embryology

1. Biochemistry: Structure of carbohydrates, lipids, animoacids, proteins and nucleic acids, glycolysis and krebs cycle, oxidation and reduction, oxidative phosphorylation, energy conservation and release, ATP, Cyclic ABP, saturated and unsaturated fatty acids, cholesterol, steroid hormones Types of enzymes, Mechanism of enzyme action immunoglobulins and immunity, Vitamins and co-enzymes; Hormones, their classification, biosynthesis and functions.

2. Physiology with special reference to animals, composition of blood, blood groups in man, coagulation, oxygen and carbondioxide transport haemoglobin, breathing and its regulation nephron and urine formation, acid base balance and homeostasis, temperature regulation in man, mechanism of conduction along the axon and across synapse, neurotransmitters, vision, hearing and other receptors; types of muscles, ultrastructure and mechanism of contraction of skeletal muscle role of salivary glands, liver, pancreas and intestinal glands in digestion, absorption of digested food, nutrition and balanced diet of man, Mechanism of action of steroid and peptide hormones, role of hypothalamus, pituitary, thyroid, parathyroid, pancreas, adrenal, testis, ovary and pineal organs and their inter-relationships, physiology of reproduction in humans, hormonal

control of development in man and insects, pheromones in insects and mammals.

Embryology: Gametogenesis, fertilization, types of eggs, cleavage, development upto gastrulation in branchiostoma, frog and chick, Fate maps of frog and chick; Metamorphosis in frog. Formation and fate of extra embryonic membrane in chick, Formation of amnion, allantois and types of placenta in mammals, function of placenta in mammals. Organisers, Regeneration, genetic, control of development, Organesis of central nervous system, sense organs heart and kidney of vertebrate embryos Ageing and its implication in relation to man.

Rural Development & Co-operation (Subject Code -24)

PAPER -1

Social & Economic Aspects

The concepts of Rural Sociology-Nature, Scope and importance of Rural Sociology, Rural Social structure, Family & Kinship. Caste and class system, Religion-Traditional practices, Community leadership, Religious and Political leadership, Promotion of Traditional and Cultural Values, Beliefs and practices for stability and development of Rural Society. Historical development of rural community, Tribal Community, Factors that influence social change, Rural & Urban disparities, Social problems or Rural economy, Agrarian relations and reforms, Poverty, unemployment and inequality, Population, Rural Education, health and sanitation and rural housing, Social problems of Weaker Sections, Rural indebtedness.

The conceptual background of development, Distinction between development & growth, The concept of Rural Development. The role of agriculture in rural development, watershed programme, Command Area Development Programme, Rural resources, Rural Income, Income difference between Rural and Urban Sector, Causes for low level Rural Income.

Rural Development Programmes, Early attempts of Rural Development, Community development programme & National Extension Service, Intensive Agricultural development programme, Intensive Agriculture Area Programme, Small Farmers Development Agency, Marginal Farmer & Agricultural Labour Development Agency, Drought prone Area Development Programme-Hill area & Tribal Area Development programme, National Rural Employment Programme-Rural Landless Employment Guarantee Programme, Integrated Rural development programme, Jawahar Rozagar Yojana-The Rural Social Welfare Programme, Schemes for women development.

Agricultural problems of Indian Economy, Land reforms-Farm technology, Special Problems of Small and Marginal farmers-problems of Agricultural labourers, Agricultural price structure-GATT & Agricultural sector.

Rural Industrilization in India, Cottage & Rural Industries, Programmes of Rural & Cottage Industries, Problems and Perspective, Development of Rural Industries during Plan period, Source of Finance to Rural Industries, Appropriate technology for industries.

Rural infrastructures-Rural Transport & Communication, Rural electrification, Bio-gas Programme, Social Forestry, Rural ecology, Rural Banking, Role of Commercial Banks, Regional Rural Banks.

Problems of Rural unemployment, Remedial measures, migration of Rural population to Urban Area.

Poverty in Rural India, Causes & magnitude, Anti Poverty programmes, impact of Anti-poverty programmes during plan periods.

Planning for Rural Development, Plans at different levels, National, State, District, Block & Village, Importance of decentralized planning for Rural Development in India.

PAPER - II

The role of Panchayath Raj institutions in Rural Development, Structure, Constitution and functions of Panchayath Raj institutions, Various legislations on Panchayath Raj Institution, Democratic decentralisation, Report of various Committes on Panchayath Raj, Role of institutional agencies in Rural Development, Rural Development Administration, Administrative accountability, Administration of special services to the weaker sections, Gandhian concept of Grama Swarajya, Peasant movement in India, Panchayath Raj experiment in Kamataka, Extension education in Rural India, Origin & Growth of extension programme, Training & various extension systems, Extension personnel, Leadership & extension. Development issues in Karnataka, Trend in growth of agricultural sector in Karnataka, Rural industries in Karnataka, Area Development authorities in Karnataka such as Malnadu development Authority, Western Ghat Development authority Karnataka Hyderabad development Authority, Maidan Development Authority, etc.

Co-operation :

Meaning of Co-operation main features, Principles, Comparison with other forces of organization, Idea of Co-operative Common wealth.

Co-operative credit movement in India, Historical development Co-operative credit structure in India, District Central Co-operative Banks, State Co-operative Apex Bank.Agriculture and Rural Development Banks, NABARD, Problems of various types of Co-operative Credit organization, Recommendations of Royal commission on Agriculture, Co-operative Planning Committee, Committee on Co-operative credit, All India Rural Credit Revten Committee, CRAFICARD, and Khusro Committee, Solutions to reform Co-operative Credit institutions in India Non-Credit Co-operatives; meaning of Non-Credit Co-operatives, Structure and Progress of Consumer Co-operatives, Marketing Co-operatives, Industrial Co-operatives. State participation in Co-operation: State and Co-operation, States Financial participation in Different types of credit cooperatives, Problems of State participation.

Co-operative Education : Imporatance of Co-operative Education Present structure which exists In India for Co-operative education, Progress and Problems. National Level Co-operatives : Structure, organization and progress of IFFCO, KRIBHCO-NCCF, NCDC, NAFED, NCUI, NABARD, National Co-operative Bank of India, Growth of Co-operative movement In Karnataka.

Hindi (Subject Code-25)

PAPER-I

1. History of Hindi Language

i) Grammatical and Lexical features of Apabhramsa, Avahatta and early Hindi.

ii) Evolution of avadhi and Braj Bhasa as literary language during the Medieval period.

iii) Evolution of Khari Boli Hindi as Literary language during the 19th century

iv) Standardization of Hindi language with Devanagari script.

v) Development of Hindi as Rashtra Bhasha during the Freedom struggle.

vi) Development of Hindi as official language of Indian Union since Independence.

vii) Major Dialects of Hindi and their inter-relationship.

viii) Significant grammatical features of standard Hindi.

2. History of Hindi Literature :

i) Chief Characteristics of the major periods of Hindi literature; Viz, Adi Kal, Bhakti Kal, Riti Kal, Bhartendu Kal and Dwivedi Kal, etc.

ii) Significant features of the main literary trends, and tendencies in Modern Hindi, viz., Chayavad Rahasyavad, Pragativad, Proyogvad, Nayi Kavita, Nayi Kahanai, Akavita, etc.

iii) Rise of Novel and Realism in Modern Hindi.

iv) A brief history of theatre and drama in Hindi.

v) Theories of literary criticism in Hindi and major Hindi literary critics.

vi) Origin and development of literary genres in Hindi.

PAPER - II

This paper will require first hand reading of the text prescribed and will be designed to test the candidate's critical ability.

Kabir : Kabir Granthavali by Shyam Sundar Das
(200 Stanzas from the beginning)

Surdas	:	Bhramara Geet Saar (200 Stanzas from the beginning only)
Tulsidas	:	Ramacharit manas (Ayodhyakand only) Kavitavali (Uttarkand only)
Bharatendu Harischandra	:	Andher Nagari
Prem Chand	:	Godan, Manas sarovar (Bhag Ek)
Jayashanker	:	Chandragupta
Prasad	:	Kamayani (Chinta, Shradha Dajja & Ida only)
Ramachandra Shukla	:	Chintamani (Pahila Bhag) (10 Essays from the beginning)
Suryakant	:	Anamika (Saroj Smriti)
Tripathi Nirala	:	Ramki Shakti (Pooja only)
S.H. Vatsayan	:	Shekar K. Jeevani (Two Parts),
Agyena	:	(Two Parts)
Gajanan Madhav	:	(Chand Ka Mukh Terha Hei)
Muktibodh	:	(Andhere mem only)

Anthropology (Subject Code-26)

Paper - 1

SECTION - I

Foundation of Anthropology:

I. Meaning and scope of Anthropology and its main branches;

(1) Social and cultural anthropology; (2) Physical Anthropology; (3) Archaeological Anthropology; (4) Linguistic Anthropology; (5) Applied Anthropology.

II. Community and Society Institutions, group and association; culture and civilization; band and tribe.

III. **Marriage**: The problems of universal definition; incest and prohibited categories; preferential forms of marriage; marriage payments; the family as the corner stone of human society; universality and the family, functions of the family, diverse forms of family, nuclear, extended, joint etc., Stability and change in the family.

IV. Kinship: Descent, residence, alliance, kins, terms and kinship behaviour, Lineage and clan.

V. Economic Anthropology : Meaning and scope; modes of exchange, barter and ceremonial exchange; reciprocity and redistribution; market and trade.

VI Political anthropology : Meaning and scope: The locus and power and the functions of Legitimate authority in different societies, Difference between State and Stateless political systems, Nation-building processes in new State, Law and justice in simpler societies.

VII Origins of Religions : Animism and animatism, Difference between religion and magic, Totamism and Taber.

VIII Field work and field work tradition in Anthropology:

SECTION - II

1. Foundations of the theory of organic evolution, Lamarckism, Darwinism and the synthetic theory; Human evolution, biological and cultural dimensions. Microevolution;

2. **The Order Primate** : A comparative study of Primates with special reference to the anthropoid apes and man.

3. Fossil evidence, for human evolution; Dryopithecus, Ramapithecus,

Australopilecines, Homo erectus (Pithecanthroplines) Homosapiens, Neanderthalensis and Homo sapiens.

4. **Genetics** : definition : The medelian principles and its application to human population.
5. Racial differentiation of Man and basis of racial classification-morphological, seriological and genetic, Role of heridity and environment In the formation of races.
6. The effects of nutrition, Inbreeding and hybridization.

SECTION - III

1. Technique, method and methodology distinguished.
2. Meaning of evolution-biological and socio-cultural the basic assumptions of 19th century evolutionism, The comparative trends, Contemporary trends in evolutionary studies.
3. Diffusion and diffusionism-American diffusionism and historical ethnology of the German speaking ethnologists, The attack on the comparative method by diffusionists and Franz Boss. The nature, purpose and methods of comparison in social cultural anthropology Redelife-Brown, Eggan, Oscar Lewis and Sarana.
4. Patterns, basic personality construct and model personality. The relevance of anthropological approach to national character studies, Recent trends in psychological anthropology.
5. Function and cause, Mainowski's contribution to functionalism in social anthropology, Function and structure, Redciliffe-Brown, Firth, Fortes and Nadel.
6. Structuralism in linguistics and in social anthropology, Levi-Strauss and Leach in viewing social structure as a model the structuralist method in the study of myth. New Ethnography and formal semantic analysis.
7. Norms and Values, Values as a category of anthropological description. Values of anthropologist and anthropology as a source of values, Cultural relativism and the issue of universal values.
8. Social anthropology and history, Scientific and humanistic studies distinguished. A critical examination of the plea for the unity of method of the natural and social sciences. The nature and logic of anthropological field work method and its autonomy.

Paper - II

Indian Anthropology

Paleolithic, Mesolithic, Neolithic, Protohistoric (Indus civilization) dimensions of Indian culture.

Distribution and racial and linguistic elements In Indian population.

The basis of Indian social system, Varna, Ashram, Purusharatha, Caste, Joint Family.

The growth of Indian anthropology, Distinctiveness of anthropological contribution in the study of tribal and peasant sections of the Indian population, The basic concepts used, Great tradition and little tradition; sacred complex Universalization and parochialization; Sanskritization and Westernization; Dominant caste, Tribe-caste continuum, Nature-Man-Spirit complex.

Ethnographic profiles of Indian tribes; racial linguistic and socioeconomic characteristic, Problems of tribal peoples, land-alienation, indebtedness, lack of educational facilities, shifting-cultivation, migration, forests and tribals unemployment, agricultural labour.

Special problems of hunting and food-gathering and other minor tribes.

The problems of culture-contact; impact of urbanization and industrialization depopulation, regionalism, economic and psychological frustrations.

History of tribal administration, The constitutional safeguards for the Scheduled Tribes, Policies, Plans, programmes of tribal development and their implementations, the response of the tribal people to the Government measures for them, the different approaches to tribal problems, the role of anthropology in tribal development.

The constitutional provisions regarding the scheduled castes, Social disabilities suffered by the Scheduled Castes and the socio-economic problems faced by them.

Issues relating to national integration.

Urdu (Subject Code - 27)

PAPER-I

a) The coming of the Aryans in India, Development of the Indo-Aryan three stages-Old Indo Aryan (OIA), Middle Indo Aryan (MIA) and New Indo-Aryan (NIA), Grouping of the New Indo-Aryan languages, Western Hindi and its dialects, Khari Boli, Braj Bhasha and Haryanavi Relationship of Urdu to Khadi, Perso, Arabic elements in Urdu. Development of Urdu from 1290 to 1800 in the North and 1400 to 1700 in the Deccan.

b) Significant features of Urdu Phonology, Morphology Syntax, Perso, Arabic elements in its phonology, Morphology and syntax, its vocabulary.

c) Dakhani Urdu, its origin and development and its significant Linguistic features:

d) The Significant features of the Dakhani Urdu literature (1450-1700), The two classical backgrounds of Urdu Literature, Perso -Arabic and Indian - Masnavi, Indian tales, the influence of the West on Urdu Literature, Classicial genres, Ghazal, Maticism - Quasida, Rubai-Qitta, Prose, Fiction, Modem Geares, Blank verse, Free verz, Novel, Short Stories, Drama-Literary criticism and Essay.

PAPER-II

This paper will require first hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

Prose -

1. Mir Amman Bagh-O-Bahar
2. Ghalib Khatut-c-Ghalib (Anjuman Tarraque-e-Urdu)
3. Hali Muqaddama-e-Shor-O-Shairi
4. Ruswa Umra-O-Jan Ada
5. Prem-Chand Wardat
6. Abdul Kalam Azad, Ghubar-e-Khatur
7. Imtiaz Ali Taj Anar Kali '
8. Mir Intikhab-e-Kalam-e-Mir (Ed. Abdual Haq)
9. Sauda Hasaid (including Hajwaiyat)
10. Ghalib Diwan-e-Ghalib
11. Iqbai Bal-a-Gibrail
12. Josh Nalihabadi, Saif-O-subu
13. Firaq Gorakhpuri, Ruhe-e-Kainat
14. Faiz Kalam-e-Faiz (complete)

ಕನ್ನಡ (Subject Code -28)

ಪತ್ರಿಕೆ - 1

ಭಾಗ - 1

ಕನ್ನಡ ಭಾಷೆಯ ಚರಿತ್ರೆ, ಭಾಷೆ ಎಂದರೇನು? ಭಾಷೆಯ ವರ್ಗೀಕರಣ, ದ್ರಾವಿಡ ಭಾಷೆಗಳ ಸಾಮಾನ್ಯ ಗುಣ ಲಕ್ಷಣಗಳು, ಕನ್ನಡ ಮತ್ತು ಇತರೆ ದ್ರಾವಿಡ ಭಾಷೆಗಳಲ್ಲಿರುವ ವ್ಯತ್ಯಾಸಗಳು, ವೈರುಧ್ಯಗಳ ಗುಣಲಕ್ಷಣ. ಕನ್ನಡ ವರ್ಣಮಾಲೆ, ಕನ್ನಡ ವ್ಯಾಕರಣದ ಕೆಲವು ಮುಖ್ಯ ಗುಣ ಲಕ್ಷಣಗಳು; ಲಿಂಗ, ಸಂಖ್ಯೆ, ವಿಭಕ್ತಿ, ಕ್ರಿಯಾಪದ, ಕಾಲ ಮತ್ತು ಸರ್ವನಾಮಗಳು, ಕನ್ನಡ ಭಾಷೆಯ ಕಾಲಮಾನದ ವಿವಿಧ ಘಟ್ಟಗಳು, ಕನ್ನಡ ಭಾಷೆಯ ಮೇಲೆ ಇತರ ಭಾಷೆಗಳ ಪ್ರಭಾವ ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ವಿವಿಧ ಪ್ರಾದೇಶಿಕ ಉಚ್ಚಾರಣೆಗಳು. ಸಾಹಿತ್ಯಕ ಮತ್ತು ಕನ್ನಡ ಆಡು ಭಾಷೆಯ ವೈಶಿಷ್ಟ್ಯಗಳು.

ಭಾಗ - 2 : ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ

ಈ ಕೆಳಕಂಡ ಕವಿಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ 10ನೇ, 12ನೇ, 16ನೇ 17ನೇ, 19ನೇ ಮತ್ತು 20ನೇ ಶತಮಾನದ ಸಾಹಿತ್ಯವನ್ನು ಸಾಮಾಜಿಕ, ಧಾರ್ಮಿಕ ಮತ್ತು ರಾಜಕೀಯ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಉಗಮ, ಬೆಳವಣಿಗೆ ಮತ್ತು ಸಾಧನೆಗಳ ವಿಮರ್ಶಾತ್ಮಕ ಅಧ್ಯಯನ.

ಚಂಪೂ : ಪಂಪ, ರನ್ನ, ನಯಸೇನ, ಹರಿಹರ, ಜನ್ನ, ಆಂಡಯ್ಯ, ತಿರುಮಲಾರ್ಯ ಮತ್ತು ಷಡಕ್ಷರಿ

ವಚನ : ದೇವರ ದಾಸಿಮಯ್ಯ, ಬಸವಣ್ಣ ಮತ್ತು ಅವರ ಸಮಕಾಲೀನರು

ರಗಳೆ : ಹರಿಹರ, ಶ್ರೀನಿವಾಸ – 'ನವರಾತ್ರಿ' ; ಕುವೆಂಪು – ಚಿತ್ರಾಂಗದ ಮತ್ತು ಶ್ರೀ ರಾಮಾಯಣ ದರ್ಶನಂ.

ಷಟ್ಪದಿ : ರಾಘವಾಂಕ, ಕುಮುದೇಂದು, ಚಾಮರಸ, ಕುಮಾರವ್ಯಾಸ, ತೊರವೆ ನರಹರಿ, ಲಕ್ಷ್ಮೀಶ ಮತ್ತು ವಿರೂಪಾಕ್ಷ ಪಂಡಿತ

ಸಾಂಗತ್ಯ : ದೇವರಾಜ, ಶಿಶುಮಾಯಣ, ನಂಜುಂಡ, ರತ್ನಾಕರವರ್ಣಿ, ಹೊನ್ನಮ್ಮ

ಗದ್ಯ : ಶಿವಕೋಟ್ಯಾಚಾರ್ಯ, ಚಾವುಂಡರಾಯ, ಹರಿಹರ, ತಿರುಮಲಾಚಾರ್ಯ, ಕೆಂಪು ನಾರಾಯಣ ಮತ್ತು ಮುದ್ದಣ್ಣ.

ಭಾಗ - 3 : ಕಾವ್ಯಮೀಮಾಂಸೆ

ಕಾವ್ಯಮೀಮಾಂಸೆಗೂ ಮತ್ತು ವಿಮರ್ಶೆಗಳಿಗೂ ಇರುವ ಮೂಲಭೂತ ವ್ಯಾತ್ಯಾಸಗಳು, ಕಾವ್ಯ ಎಂದರೇನು? ಮತ್ತು ಅದರ ಲಕ್ಷಣ ಹಾಗೂ ಉದ್ದೇಶ. ವಿವಿಧ ಕಾವ್ಯ ಸಿದ್ಧಾಂತ; ಪಂಥಗಳ ಪ್ರತಿಪಾದನೆಗಳ ನಿರೂಪಣೆ, ಅಲಂಕಾರ, ರೀತಿ, ವಕ್ರೋಕ್ತಿ, ಧ್ವನಿ ರಸ, ಔಚಿತ್ಯ. ಭರತನ ರಸಸೂತ್ರಗಳ ನಿರೂಪಣೆ ಮತ್ತು ಚರ್ಚೆ. ರಸಗಳ ಸಂಖ್ಯಾ ನಿರ್ಣಯದ ಚರ್ಚೆ.

ಸೌಂದರ್ಯಾನುಭವ, ಪ್ರತಿಭೆಯ ಸ್ವರೂಪ, ವ್ಯುತ್ಪತ್ತಿ, ಪ್ರತಿಮೆ, ಮಾನಸಿಕ ದೂರ, ವಿಮರ್ಶೆಯ ಮೂಲ ತತ್ವಗಳು, ಸಹೃದಯ ಮತ್ತು ವಿಮರ್ಶಕರಿಗಿರಬೇಕಾದ ಅರ್ಹತೆ, ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಇತ್ತೀಚಿನ ಪ್ರಕಾರಗಳು.

ಭಾಗ - 4 : ಕರ್ನಾಟಕದ ಸಾಂಸ್ಕೃತಿಕ ಇತಿಹಾಸ

ಭಾರತೀಯ ಸಾಂಸ್ಕೃತಿಕ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ವಿಶೇಷವಾಗಿ ಕರ್ನಾಟಕಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಸಾಂಸ್ಕೃತಿಕ ಅಧ್ಯಯನ. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿಯ ಪ್ರಾಚೀನತೆ, ಈ ಕೆಳಕಂಡ ಕರ್ನಾಟಕದ ರಾಜವಂಶಗಳ ಅಮೂಲಾಗ್ರ ಪರಿಚಯ. ಕಲ್ಯಾಣಿ ಮತ್ತು ಬಾದಾಮಿ

ಕನ್ನಡ (Subject Code -28)

ಪತ್ರಿಕೆ - 1

ಭಾಗ - 1

ಕನ್ನಡ ಭಾಷೆಯ ಚರಿತ್ರೆ, ಭಾಷೆ ಎಂದರೇನು? ಭಾಷೆಯ ವರ್ಗೀಕರಣ, ದ್ರಾವಿಡ ಭಾಷೆಗಳ ಸಾಮಾನ್ಯ ಗುಣ ಲಕ್ಷಣಗಳು, ಕನ್ನಡ ಮತ್ತು ಇತರೆ ದ್ರಾವಿಡ ಭಾಷೆಗಳಲ್ಲಿರುವ ವ್ಯತ್ಯಾಸಗಳು, ವೈರುಧ್ಯಗಳ ಗುಣಲಕ್ಷಣ. ಕನ್ನಡ ವರ್ಣಮಾಲೆ, ಕನ್ನಡ ವ್ಯಾಕರಣದ ಕೆಲವು ಮುಖ್ಯ ಗುಣ ಲಕ್ಷಣಗಳು; ಲಿಂಗ, ಸಂಖ್ಯೆ, ವಿಭಕ್ತಿ, ಕ್ರಿಯಾಪದ, ಕಾಲ ಮತ್ತು ಸರ್ವನಾಮಗಳು, ಕನ್ನಡ ಭಾಷೆಯ ಕಾಲಮಾನದ ವಿವಿಧ ಘಟ್ಟಗಳು, ಕನ್ನಡ ಭಾಷೆಯ ಮೇಲೆ ಇತರ ಭಾಷೆಗಳ ಪ್ರಭಾವ ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ವಿವಿಧ ಪ್ರಾದೇಶಿಕ ಉಚ್ಚಾರಣೆಗಳು. ಸಾಹಿತ್ಯಕ ಮತ್ತು ಕನ್ನಡ ಆಡು ಭಾಷೆಯ ವೈಶಿಷ್ಟ್ಯಗಳು.

ಭಾಗ - 2 : ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ

ಈ ಕೆಳಕಂಡ ಕವಿಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ 10ನೇ, 12ನೇ, 16ನೇ 17ನೇ, 19ನೇ ಮತ್ತು 20ನೇ ಶತಮಾನದ ಸಾಹಿತ್ಯವನ್ನು ಸಾಮಾಜಿಕ, ಧಾರ್ಮಿಕ ಮತ್ತು ರಾಜಕೀಯ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಉಗಮ, ಬೆಳವಣಿಗೆ ಮತ್ತು ಸಾಧನೆಗಳ ವಿಮರ್ಶಾತ್ಮಕ ಅಧ್ಯಯನ.

ಚಂಪೂ : ಪಂಪ, ರನ್ನ, ನಯಸೇನ, ಹರಿಹರ, ಜನ್ನ, ಆಂಡಯ್ಯ, ತಿರುಮಲಾರ್ಯ ಮತ್ತು ಷಡಕ್ಷರಿ

ವಚನ : ದೇವರ ದಾಸಿಮಯ್ಯ, ಬಸವಣ್ಣ ಮತ್ತು ಅವರ ಸಮಕಾಲೀನರು

ರಗಳೆ : ಹರಿಹರ, ಶ್ರೀನಿವಾಸ – 'ನವರಾತ್ರಿ' ; ಕುವೆಂಪು – ಚಿತ್ರಾಂಗದ ಮತ್ತು ಶ್ರೀ ರಾಮಾಯಣ ದರ್ಶನಂ.

ಷಟ್ಪದಿ : ರಾಘವಾಂಕ, ಕುಮುದೇಂದು, ಚಾಮರಸ, ಕುಮಾರವ್ಯಾಸ, ತೊರವೆ ನರಹರಿ, ಲಕ್ಷ್ಮೀಶ ಮತ್ತು ವಿರೂಪಾಕ್ಷ ಪಂಡಿತ

ಸಾಂಗತ್ಯ : ದೇವರಾಜ, ಶಿಶುಮಾಯಣ, ನಂಜುಂಡ, ರತ್ನಾಕರವರ್ಣಿ, ಹೊನ್ನಮ್ಮ

ಗದ್ಯ : ಶಿವಕೋಟ್ಯಾಚಾರ್ಯ, ಚಾವುಂಡರಾಯ, ಹರಿಹರ, ತಿರುಮಲಾಚಾರ್ಯ, ಕೆಂಪು ನಾರಾಯಣ ಮತ್ತು ಮುದ್ದಣ್ಣ.

ಭಾಗ - 3 : ಕಾವ್ಯಮೀಮಾಂಸೆ

ಕಾವ್ಯಮೀಮಾಂಸೆಗೂ ಮತ್ತು ವಿಮರ್ಶೆಗಳಿಗೂ ಇರುವ ಮೂಲಭೂತ ವ್ಯತ್ಯಾಸಗಳು, ಕಾವ್ಯ ಎಂದರೇನು? ಮತ್ತು ಅದರ ಲಕ್ಷಣ ಹಾಗೂ ಉದ್ದೇಶ. ವಿವಿಧ ಕಾವ್ಯ ಸಿದ್ಧಾಂತ; ಪಂಥಗಳ ಪ್ರತಿಪಾದನೆಗಳ ನಿರೂಪಣೆ, ಅಲಂಕಾರ, ರೀತಿ, ವಕ್ರೋಕ್ತಿ, ಧ್ವನಿ ರಸ, ಔಚಿತ್ಯ. ಭರತನ ರಸಸೂತ್ರಗಳ ನಿರೂಪಣೆ ಮತ್ತು ಚರ್ಚೆ. ರಸಗಳ ಸಂಖ್ಯಾ ನಿರ್ಣಯದ ಚರ್ಚೆ.

ಸೌಂದರ್ಯಾನುಭವ, ಪ್ರತಿಭೆಯ ಸ್ವರೂಪ, ವ್ಯುತ್ಪತ್ತಿ, ಪ್ರತಿಮೆ, ಮಾನಸಿಕ ದೂರ, ವಿಮರ್ಶೆಯ ಮೂಲ ತತ್ವಗಳು, ಸಹೃದಯ ಮತ್ತು ವಿಮರ್ಶಕರಿಗಿರಬೇಕಾದ ಅರ್ಹತೆ, ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಇತ್ತೀಚಿನ ಪ್ರಕಾರಗಳು.

ಭಾಗ - 4 : ಕರ್ನಾಟಕದ ಸಾಂಸ್ಕೃತಿಕ ಇತಿಹಾಸ

ಭಾರತೀಯ ಸಾಂಸ್ಕೃತಿಕ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ವಿಶೇಷವಾಗಿ ಕರ್ನಾಟಕಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಸಾಂಸ್ಕೃತಿಕ ಅಧ್ಯಯನ. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿಯ ಪ್ರಾಚೀನತೆ, ಈ ಕೆಳಕಂಡ ಕರ್ನಾಟಕದ ರಾಜವಂಶಗಳ ಅಮೂಲಾಗ್ರ ಪರಿಚಯ. ಕಲ್ಯಾಣಿ ಮತ್ತು ಬಾದಾಮಿ

ಚಾಲುಕ್ಯರು, ರಾಷ್ಟ್ರಕೂಟರು, ಹೊಯ್ಸಳರು ಮತ್ತು ವಿಜಯನಗರದ ಅರಸರು. ಕರ್ನಾಟಕದಲ್ಲಿನ ಧಾರ್ಮಿಕ ಚಳುವಳಿಗಳು, ಸಾಮಾಜಿಕ ಸ್ಥಿತಿಗತಿಗಳು, ಕಲೆ ಮತ್ತು ವಾಸ್ತು ಶಿಲ್ಪ. ಕರ್ನಾಟಕದಲ್ಲಿ ನಡೆದ ಸ್ವಾತಂತ್ರ್ಯ ಚಳುವಳಿಗಳು, ಕರ್ನಾಟಕದ ಏಕೀಕರಣ.

ಪತ್ರಿಕೆ - 2

ಈ ಪತ್ರಿಕೆಯು ಪಠ್ಯದ ಪ್ರಾಥಮಿಕ ಅಧ್ಯಯನ ಮತ್ತು ಅಭ್ಯರ್ಥಿಯ ವಿಮರ್ಶಾ ಸಾಮರ್ಥ್ಯವನ್ನು ಪರೀಕ್ಷಿಸಲು ನಿರೂಪಿಸಲ್ಪಟ್ಟಿದೆ.

ಭಾಗ - 1 : ಹಳೆಗನ್ನಡ

ಆದಿ ಪುರಾಣ ಸಂಗ್ರಹ : (ಸಂ) ಎಲ್. ಗುಂಡಪ್ಪ, ವಿಕ್ರಮಾರ್ಜುನ ವಿಜಯ (9ನೇ ಮತ್ತು 10ನೇ ಆಶ್ವಾಸಗಳು)

ಭಾಗ - 2 : ಮಧ್ಯಕಾಲೀನ ಕನ್ನಡ (ನಡುಗನ್ನಡ)

ಬಸವಣ್ಣನವರ ವಚನಗಳು : ಡಾ. ಎಲ್. ಬಸವರಾಜು, ಪ್ರಕಟಣೆ : ಗೀತಾ ಬುಕ್ ಹೌಸ್, ಮೈಸೂರು - 1, ಬಸವರಾಜ ದೇವರ ರಗಳೆ : (ಸಂ) ಟಿ.ಎಸ್. ವೆಂಕಣ್ಣಯ್ಯ, ಹರಿಶ್ಚಂದ್ರಕಾವ್ಯ ಸಂಗ್ರಹ : (ಸಂ) ಟಿ.ಎಸ್. ವೆಂಕಣ್ಣಯ್ಯ ಮತ್ತು ಎ.ಆರ್. ಕೃಷ್ಣಶಾಸ್ತ್ರಿ, ಉದ್ಯೋಗಪರ್ವ ಸಂಗ್ರಹ : (ಸಂ) ತ.ಸು. ಶಾಮರಾವ್, ಪಾರಮಾರ್ಥ (ಸರ್ವಜ್ಞನ ವಚನಗಳು) : (ಸಂ) ಡಾ॥ ಎಲ್. ಬಸವರಾಜು, ಪ್ರಕಟಣೆ : ಗೀತಾ ಬುಕ್ ಹೌಸ್, ಮೈಸೂರು - 1, ಭರತೇಶ ವೈಭವ ಸಂಗ್ರಹ (1ರಿಂದ 4ನೇ ಅಧ್ಯಾಯಗಳು)

ಭಾಗ - 3 : ಹೊಸಗನ್ನಡ (ಆಧುನಿಕ ಕನ್ನಡ)

ಕಾವ್ಯ : ಕನ್ನಡ ಬಾವುಟ - (ಸಂ) ಬಿ.ಎಂ. ಶ್ರೀಕಂಠಯ್ಯ, ಕನ್ನಡ ಕಾವ್ಯ ಸಂಗ್ರಹ - ಡಾ॥ ಯು. ಆರ್. ಅನಂತಮೂರ್ತಿ, ನ್ಯಾಷನಲ್ ಬುಕ್ ಟ್ರಸ್ಟ್ ಆಫ್ ಇಂಡಿಯಾ, ಸಂಕ್ರಮಣ ಹೊಸಕಾವ್ಯ - (ಸಂ) ಚಂದ್ರಶೇಖರ ಪಾಟೀಲ ಮತ್ತು ಇತರರು.

ಕಾದಂಬರಿ : ಮಲೆಗಳಲ್ಲಿ ಮದುಮಗಳು - ಕುವೆಂಪು, ಚೋಮನ ದುಡಿ - ಶಿವರಾಮ ಕಾರಂತ, ಭಾರತೀಪುರ - ಯು.ಆರ್. ಅನಂತಮೂರ್ತಿ

ಸಣ್ಣಕಥೆ : ಕನ್ನಡದ ಅತ್ಯುತ್ತಮ ಸಣ್ಣ ಕಥೆಗಳು - (ಸಂ) ಕೆ. ನರಸಿಂಹಮೂರ್ತಿ

ನಾಟಕ : ಅಶ್ವತ್ಥಾಮನ್ - ಬಿ.ಎಂ.ಶ್ರೀ, ಬೆರಳ್‌ಗೆ ಕೊರಳ್ - ಕುವೆಂಪು

ಪ್ರಬಂಧ : ಹೊಸಗನ್ನಡ ಪ್ರಬಂಧ ಸಂಕಲನ - (ಸಂ) ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ್

ಭಾಗ - 4

ಜನಪದ ಸಾಹಿತ್ಯ : ಗರತಿಯ ಹಾಡು - (ಸಂ) ಚನ್ನಮಲ್ಲಪ್ಪ ಮತ್ತು ಇತರರು, ಜೀವನ ಜೋಕಾಲಿ (ಭಾಗ - 3) ಗರತಿಯ ಗರಿಮೆ - (ಸಂ) ಡಾ॥ ಎಂ.ಎಸ್. ಸುಂಕಾಪುರ್, ಬೆಳಗಾವಿ ಜಿಲ್ಲೆಯ ಜನಪದ ಕಥೆಗಳು - (ಸಂ) ಟಿ.ಎಸ್. ರಾಜಪ್ಪ, ನಮ್ಮ ಸುತ್ತಣ ಗಾದೆಗಳು - (ಸಂ) ಸುಧಾಕರ, ನಮ್ಮ ಒಗಟುಗಳು - (ಸಂ) ರಾಮೇಗೌಡ (ರಾಗೌ)

Kannada (Subject Code - 28)

PAPER-I

Section -1

History of Kannada language. What is language? Classification of language. General characteristics of Dravidian languages; Competitive and contrastive features of Kannada and other Dravidian languages; Kannada alphabets, Some salient features of Kannada grammer, gender, number, case, verbs, tense and pronouns. Chronological stages of Kannada language, influence of other languages on Kannada language borrowing and semantic changes, Kannada language and its dialects, literary and colloquial style of Kannada.

Section - II: History of Kannada Literature

The literatures of 10th, 12th, 16th, 17th, 19th and 20th centuries are to be studied against their social, religious and political backgrounds. And the following literary forms of Kannada with reference to their origin, development and achievement have to be critically studied on the basis of the poets listed below:

Champu : Pampa, Ranna, Nayasena, Harihara, Janna, Andayya, Tirumalarya and Shadakshari.

Vachana : Devara Dasimayya, Basavanna and his contemporaries.

Ragale : Harihara, Srinivasa - 'Navarathri', Kuvempu - Chitrangada and Sri Ramayanadarshanam.

Shatpadi : Raghavanka, Kumudendu, Chamarasa, Kumaravyasajorave Narahari, Lakshmisha and Virupaksha Pandita.

Sangatya : Deparaja Sisumayana Nanjunda, Rathanakaravarni, Honamma.

Prose : Sivakotyacharya, Chavundaraya Harihara. Tirumalaraya, Kempu Narayana and Muddana.

Section - III: Poetics :

The functional differences of poetics and criticism. Definitions and aims of poetry, Enunciation of thesis of the various schools of Poetry, Alankara, Reeti, Vakrokti, Rasa, Dhvani & Auchitya, Definition and discussion of Rasasutra of Bharata, Discussion of the number of Rasas.

Aesthetic experience, the nature of Intellect, vyutpathi, prathima, psychical distance of fundamental principles of criticism the qualification of a Sahradaya and the critic. The recent forms of Kannada literature.

Section - IV : Cultural History of Karnataka :

Karnataka Culture against Indian background; Antiquity of Karnataka culture, A broad acquaintance of the following dynasties of Karnataka : Chalukyas of Badami and Kalyana, Rashtrakutas, Hoysalas and Emperors Vijayanagar.

Religious Movements in Karnataka, Social Conditions. Art and Architecture. Freedom Movement in Karnataka, Unification of Karnataka.

PAPER - II

This paper will require first-hand reading of the text prescribed and will be designed to test the candidates's critical ability.

Section -1: Old Kannada - (Halagannada)

Adi Purana Sangraha: L. Gundappa, Vikramarjunavijaya (cantos 9 and 10)

Section - II: Middle Kannada : (Nadugannada) •

Basavannanavara Vachanagalu Dr. L. Basavaraju, published by Gita Book House, Mysore-1, Basavarajedevara Ragale: Edited by T.S. Venkannaiah, Harischandra Kavya Sangraha: Edited by T.S. Venkannaiah andA.R. Krishnasastri, Udyogaparva: sangraha: Edited by T.S. Shamarao, Paramartha (Vachanas of Sarvajnaa) Edited by Dr. L. Basavaraju, Gita Book House, Mysore, Bharatesa vai bhava sangraha (I to IV Cantos)

Section - Ill: Modern Kannada : (Hosagannada)

Poetry : Kannada Bavuta : Edited by B.M. Srikanthaiah, Kannada Kavya sangraha: Dr. U.R. Anantha Murthy, National Book Trust of India, Sankramana Hosa Kavya : Edited by Chandrashekara Patila and others.

Novel : Malegalalli Madumagalu : Kuvempu, Chomaana dudi : Sivaram Karanta, Bharatipura : U.R. Anantha Murthy.

Short Story: Kannada Atyuttama Sanna Kathegalu : Edited by K. Narasimhamurthy.

Nataka : Drama : Ashwathaman : B.M. Sri, Beralgkoral : Kuvempu, Essay : Hosagannada Prabhanda Sankalana : Edited by Gorur Ramaswamy Ayyangar.

Section - IV

Folk literature : Garatiya hadu : Edited by Channamallappa and others. Jivana jokali (Part-Ill) Garatiyara garime : Edited by Dr. M.S. Sunkapur Belagavi Jilleya; Janapada Kathegalu : Edited by T.S. Rajappa, Namma suttana gadegalu : Edited by Sudhakara, Namma Ogatugalu : Edited by Rame Gowda (Ra Gow)

English (Subject Code -29)

PAPER -1

Detailed study of a literary age (19th century)

The paper will cover the study of English literature from 1798 to 1900 with special reference to the works of Wordsworth, Coleridge, Shelley, Keats, Lamb, Haslitt, Thackeray, Dickens, Tennyson, Robert Browning. Arnold, George Eliot, Carlyle, Ruskin, Pater.

Evidence of first hand reading will be required. The paper will be designed to test not only the candidates' knowledge of the authors prescribed but also their understanding of the main literary trends during the period. Questions having a bearing on the social and cultural background of the period may be included.

PAPER - II

This paper will require first-hand reading of the texts prescribed and will be designed to test to candidate's critical ability.

1.	Shakespeare	-	As you like it; Henry IV Part I and II; Hamlet; The Tempest
2.	Milton	-	Paradise Lost
3.	Jane Austen	-	Emma
4.	Wordsowrth	-	The Prelude
5.	Dickens	-	David Copperfield
6.	George Eliot	-	Middlemarch
7.	Hardy	-	Jude the Obscure
8.	Yeats	-	The Second coming,
		-	A Prayer for my Daughter,
		-	Sailing to Byzantium
		-	Maru - The Tower,
		-	Among School Children-
		-	Easter 1916 — Byzantium
		-	Leda and the Swan
		-	Lapis Lazudili-
9.	Eliot	-	The Waste land
10.	D.H. Lawrence	-	The Rainbow

Management (Subject Code -30)

PAPER -1

The candidate should make a study of the development of the field of management as a systematic body of knowledge and acquaint himself adequately with the contributions of leading authorities on the subject. He should study the role, function and behaviour of a manager and relevance of various concepts and theories to the Indian context. Apart from these general concepts, the candidate should study the environment of business and also attempt to understand the tools and techniques of decision making.

The candidate would be given choice to answer any five questions.

Organisational Behaviour & Management Concepts :

Significance of social, psychological factors for understanding organizational behaviour. Relevance of theories of motivation, Contribution of Maslow, Herzberg. Me. Gregor, Me. Glelland and other leading authorities, Research studies in leardership. Management by Objectives. Small group and inter-group behaviour. Application of these concepts for understanding the managerial role, conflict and co-operation, work norms and dynamics of organizational behaviour Organisation change.

Organisational Design :

Classical, non-classical and open systems, theories of organization, Centralization, decentralization, delegation, authority and control, Organisation structure, systems and processes, strategies, policies and objectives, Decision making, communication and control. Management information system and role of computer in management.

Economic Environment:

National Income, analysis and its use in business forecasting. Trends and structure in Indian Economy, Government programmes and policies. Regulatory policies, monetary, fiscal and planning and the impact of such macropolicies on enterprise decisions and plans - Demand analysis and forecasting, cost analysis, pricing decisions under different market structures - Pricing of joint products and price discrimination - capital budgeting - applications under Indian conditions. Choice of projects and cost benefit analysis, choice of production techniques.

Quantitative Methods :

Classifical Optimization : Maximum and minimum of single and several variables; optimization under constraints - Applications. Linear programming; Problems formulation - Graphical solution - Simplex Method Quality - Post optimality analysis - Applications of integral programming and dynamic programming - Formulation of Transportation and assignment Models of linear programming and methods of solutions.

Statistical Methods: Measures of Central tendencies and variations -Application of Binomial, Poison and Normal distributions. Time series - Regression and correlation - Tests of Hypotheses - Decision making under risk; Decision Trees - Expected Monetary

Value - Value of Information - Application of Eaye's Theorem to posterior analysis. Decision making under uncertainty. Different criterion for selection optimum strategies.

Paper - II

Section - I Marketing Management

Marketing and Economic Development - Marketing Concept and its applicability to the Indian Economy - Major tasks of management in the context of developing economy - Rural and Urban marketing their prospects and problems.

Planning and strategy in the context of domestic and expert marketing - Concept of marketing mix-Market Segmentation and Product differentiations strategies - Consumer Motivation and Behaviour-Consumer Behavioural Models- Product, Brand, distribution; Public distribution system, price and promotion.

Decisions:

Planning and control of marketing programmes - marketing research and Models -Sales Organisational dynamics - Marketing Information System. Marketing audit and control.

Export incentives and promotional strategies-Role of Government, trade association and individual organization - problems and prospects and export marketing.

Section - II Production and Materials Management

Fundamentals of production from management point of view. Types of manufacturing systems, continuous repetitive, intermittent. Organising for Production, Longrane, forecast and aggregate Production Planning. Plant Design : Process planning. Plant size and scale of operations, location of plant, layout of physical facilities, Equipment replacement and maintenance.

Functions of Production Planning and Control Routing. Loading and Scheduling for different types of production systems. Assembly Line, Balancing, Machine Line Balancing.

Role and importance of material management, Material handling, Value analysis, Quality Control, Waste and Scrap disposal, Make or Buy decision, Cofidication, Standardisation and spare parts Inventory, Inventory control-ABC analysis Economic order quantity, Recorder point. Safety work, Two Bin system. Waste management DOS & D purchase process and procedure.

Section - III Financial Management

General tools of Financial Analysis: Ratio Analysis, funds flow analysis, cost-volume - profit analysis, cash budgeting, financial and operating leverage.

Investment Decision :

Steps in capital expenditure management, criteria for investment appraisal, cost of capital and its application in public and private sectors. Risk analysis in investment

decision, organizational evaluation of capital expenditure management with special reference to India.

Financing Decision :

Estimating the firms of financial requirements, financial structure determinations, capital markets, institutional mechanism for funds, with special references to India, security analysis, leasing and sub-contracting.

Working Capital management:

Determining the size of working capital, managing the managerial attitude towards risk in working capital, management of cash, inventory and accounts receivables, effects of inflation on working capital management.

Income Determination and Distribution :

Internal financing, determination of dividend policy, implication of inflationary tendencies in determining the dividend policy, valuation and dividend policy.

Financial management in Public Sector with special refernce to India.

Performance budgeting and principles of financial accounting. Systems of management control.

Section - IV Human Resource Management

Characteristics and significance of Human Resources, Personnel Policies - Manpower, Policy and Planning - Recruitment and Selection Technique - Training and Development Promotions and Transfers; Performance Appraisal - Job Evaluation Wage and Salary.

Administration:

Employee Morals and Motivation : Conflict Management: Management of Change and Development.

Industrial Relations, Economy and Society in India; Worker Profile and Management Styles in India; Trade Unionism in India; Labour Legislation with special reference to Industrial Disputes Act; Payment of Bonus Act; Trade Unions Act; Industrial democracy and Worker's participation in Management; Collective Bargaining; Conciliation and adjudication; Discipline and Grievances Handling in Industry.

Secretary,
Karnataka Public Service Commission,
Bangalore.