



**KERALA DEVASWOM RECRUITMENT BOARD**

<b>Name of Post</b>	<b>: Pharmacist Gr.II</b>
<b>Devaswom</b>	<b>: Guruvayur Devaswom</b>
<b>Category No.</b>	<b>: 15/2020</b>
<b>Mode of Examination</b>	<b>: Objective Type Test (OMR Valuation)</b>
<b>Total Questions</b>	<b>: 100</b>
<b>Total Marks</b>	<b>: 100</b>
<b>Duration of Test</b>	<b>: 1 hr. 15 minutes</b>
<b>Medium of questions</b>	<b>: English</b>

**SYLLABUS**  
**MAIN TOPICS**

**PART I**

**General Knowledge, Current affairs, Renaissance in Kerala, Temple affairs.**

**PART II**

**Topics based on the Educational Qualifications fixed for the post.**

**DETAILED SYLLABUS BASED ON MAIN TOPICS**

**PART I**

**General Knowledge, Current affairs, Renaissance in Kerala, Temple affairs.**

**Total questions : 30**

**Total marks : 30**

\* Important International, National and Regional events in the field of Economy, Science and Technology, Sports and Games, Politics, Arts and Culture, Cinema.

\* Geographical features of India with special emphasis on Kerala. Climate, Rivers. Major River Projects, Tourist Destinations etc.

\* Salient features of Indian Constitution-Fundamental Rights and Fundamental Duties-Constitutional bodies, Executive, Legislature, Judiciary at Union and State level.

\* Institutions of National importance in the field of Health Care, Education, Agriculture Research, Science and Technology, Management studies, Information Technology. Space Research and Space Exploration.

\* Social Service, Social welfare, Social security-Legislations. Schemes of Central and State Governments. Right to information. Food Security Act. Major environmental Acts in India. Various Employment Guarantee Programmes, Pension Schemes of Central and State Governments.

\* The National and State Women Commissions. National and State Human Rights Commissions. Lokpal, Ombudsman. National and State Institutions for the Protection of Women and Child rights. State Literacy Mission. Kerala Social Security Mission. Haritha Kerala Mission. Kudumbasree.

\* Kerala's contribution to the field of Sports and Games. Famous sports Personalities - Achievements in National and International events. Olympians, Arjuna Award winners.

\* Corruption. Factors contributing Corruption. – Anti Corruption laws in India. Constitutional Provisions to check Corruption. Central Bureau of Investigation, Enforcement Directorate, Central Vigilance Commission, National Investigating Agency, State Vigilance and Anticorruption Bureau–Constitution, Powers, Functions and responsibilities.

\* Democratic decentralisation in India in general and Kerala in particular. Methods, Benefits and objectives of Decentralisation. Local Self Governments – Rural and Urban–Powers and Functions.

\* Road Safety and Safety measures. General Awareness of Traffic rules and regulations. Traffic offences. Traffic rules enforcement Authorities. Web application for Online vehicle registration and Driving License –Motor vehicles (Amendment) Act 2019. Important recommendations.

\* Kerala Renaissance. Social reformers. Women Emancipation. Various Revolts and Agitations. Anti caste Movements. Temple Entry movement. Temple Entry Proclamation. Malabar rebellion of 1921. Pazhassi revolt. Left Movements. Awakening through Literature. Important Literary Figures. Purogamana Sahithya Prasthanam, Nataka Prasthanam, Library Movements. etc

\* Temple Affairs – Famous Temples in Kerala, Hindu customs and Traditions – Holy books of Hinduism. Basic knowledge. Great Indian Spiritual leaders, Saints. Thinkers and Philosophers. Various Devaswom Boards – Kerala Devaswom Recruitment Board – Formation, Powers, Responsibilities, Hierarchical setup.

## PART II

**Total questions : 70      Total Marks : 70**

### PHARMACEUTICS

Introduction of different dosage forms. Classification with examples – their relative applications. New drug delivery systems. Introduction to Pharmacopoeias with special reference to the Indian Pharmacopoeia. Metrology-System of weights and measures. Percentage calculations and adjustment of products. Use of alligation method in calculations and adjustment of products. Use of alligation method in calculations. Isotonic solutions.

Packages of pharmaceuticals – Desirable features of a container and types of containers. Study of glass & plastics as materials for containers and rubber as a material for closure-their merits and demerits. Introduction to aerosol packaging.

Extraction and Galenicals- (a) Study of percolation and maceration and their modification, continuous hot extraction-Application in the preparation of tinctures and extracts. (b) Introduction to Ayurvedic dosage forms. Preparation of purified water I.P. and water for Injection I.P.construction and working of the still used for the same. Sterilization-Concept of sterilization and its differences from disinfection. Detailed study of Sterilization with moist heat, Dry heat sterilization, Sterilization by radiation, Sterilization by filtration and Gaseous sterilization. Aseptic techniques-Applications of sterilization process in hospitals particularly with reference to surgical dressings and intravenous fluids. Precautions for safe and effective handling of sterilization equipment. Study of immunological products like sera, vaccines, toxoids & their preparations.

Processing of Tablets-Definition; different type of compressed tablets and their properties. Process involved in the production of tablets; Tablets excipients; Defects in tablets; Evaluation of Tablets; Physical standards including Disintegration and Dissolution. Tablet coating-sugar coating; films coating, enteric coating and micro-encapsulation.

Processing of Capsules-hard and soft gelatin capsules; different sizes of capsules, filling of capsules; handling and storage of capsules. Special applications of capsules.

Prescriptions-Reading and understanding of prescriptions; Latin terms commonly used Calculations involved in dispensing. Incompatibilities in prescriptions-study of various types of incompatibilities-physical, chemical and therapeutic. Posology-Dose and dosage of drugs, factors influencing dose, calculations of doses on the basis of age, sex, surface area and veterinary doses. Methods of preparation with theoretical and practical aspects, use of appropriate containers and closures, special labeling requirements and storage conditions of a). Powders-Type of powders- Advantages and disadvantages of powders, Granules, preparation of different types of powders encountered in prescriptions. Liquid oral Dosage forms: Monophasic-Theoretical aspects including commonly used vehicles, essential adjuvant like stabilizers, colorants and flavors, with examples. Review of the following monophasic liquids with details of formulation and practical methods, Liquids for internal administration, Liquids for external administration or used on mucous membranes Mixtures and concentrates, Gargles Syrups Mouth Washes, Throat-paints, Elixirs, Douches, Ear Drops, Nasal drops, Sprays, Liniments & Lotions. Biphasic Liquid

Dosage Forms: Suspensions, Emulsions, Semi-Solid Dosage forms Ointments: Pastes, Jellies: Suppositories and pessaries. Dental and cosmetic preparations: Introduction of Dentrifrices, facial cosmetics, Deodorants, Antiperspirants, shampoo, Hair dressings and Hair removers. Sterile Dosage forms parenteral dosage forms. Ophthalmic products.

## PHARMACEUTICAL CHEMISTRY

The Chemistry of following pharmaceutical organic compounds covering Important physical and chemical properties, medicinal and pharmaceutical uses, storage conditions and chemical incompatibility of INORGANIC Acids, bases and buffers, Antioxidants, Gastrointestinal agents, Acidifying agents-Antacids-Combinations of antacid preparations. Protective and adsorbents, Saline cathartics. Topical Agents Protective, Antimicrobials and Astringents. Inorganic Dental Products-Inhalants-Oxygen, Carbon dioxide, Nitrous Oxide. Respiratory stimulants-Expectorants and Emetics-Antidotes. Major Intra and Extra cellular electrolytes. Electrolytes used for replacement therapy – Sodium chloride and its preparations. Potassium chloride and its preparations. Physiological acid-base balance and electrolytes used-Combination of oral electrolyte powders and solutions. Radio pharmaceuticals and contrast media-Radio activity-Alpha; Beta and Gamma Radiations, Biological effects of radiations. Radio isotopes-their uses, Storage and precautions with special reference to the official preparations. Radio opaque contrast media Barium sulfate. Quality control of Drugs and pharmaceuticals-sources of impurities in pharmaceuticals. Limit tests for Arsenic, Chloride, Sulfate, Iron and Heavy Metals. Introduction to nomenclature reference to heterocyclic system containing upto 3 rings. Uses, Important physical and chemical properties, stability and storage conditions and the different type of pharmaceutical formulations of the following drugs and their popular brand names. Antiseptics and disinfectants-Proflavine, Benzalkonium chloride, Cetrimide, Phenol, Chloroxylenol, Formaldehyde solution Hexachlorophene, Nitrofurantoin. Sulphonamides-Sulphadiazine, Sulphaguanidine, Phthalylsulphathiazole, Succinylsulphathiazole, Sulphadimethoxine, sulphamethoxyphyridazine, Co-trimoxazole, sulphacetamide Antileprotic Drugs-Clofazimine, Thiambutosone, Dapsone, solapsone, Anti-tubercular Drugs-Isoniazid, PAS, Streptomycin, Rifampicin, Ethambutol, Thiacetazone, Ethionamide, cycloserine, pyrazinamide. Antimoebic and Anthelmintic Drugs-Emetine, Metronidazole, Halogenated hydroxyquinolines, Diloxanide, furazolidone, Mebendazole D.E.C. Antibiotics-Benzyl penicillin, phenoxymethyl penicillin, Benzathine penicillin, Ampicillin. Cloxacillin, Carbenicillin, Gentamicin, Neomycin, Erythromycin, Tetracycline, Cephalexin, Cephaloridine, Cephalothin, Griseofulvin, Chloramphenicol. Antifungal agents-Tolnaftate, Nystatin Amphotericin, Antimalarial Drugs-Chloroquine, Amodiaquine, Pamaquine, Proguanil, pyrimethamine, Quinine, Trimethoprim. Tranquilizers-Chlorpromazine, Prochlorperazine, Trifluoperazine, Thiothixene, Haloperidol, Triperidol, Oxypertine, Chlordiazepoxide, Diazepam, Lorazepam. Glutethimide, Methyprylon, Paraldehyde, Trichloroethylene. Antidepressant drugs-Amitriptyline, Nortriptyline, Imipramine, Tranylcypromine. Analeptics-Theophylline, Faddeine, Coramine, Dextro-amphetamine. Adrenergic drugs-Adrenaline, Noradrenaline, Isoprenaline, Phenylephrine, Salbutamol, Terbutaline, Ephedrine, Pseudoephedrine. Adrenergic antagonist- Tolazoline, Propranolol, Practolol, Cholinergic Drugs-Neostigmine, Pyridostigmine, pralidoxime, Pilocarpine, Physostigmine. Cholinergic Drugs-Neostigmine, Pyridostigmine, Pralidoxime, Pilocarpine, Physostigmine. Cholinergic Antagonists-Atropine, Hyoscine, Hamatrophine, Propantheline, Benztropin, Tropicamide, Biperiden. Diuretic/drugs-Furosemide, chlorothiazide, Hydrochlorothiazide, Benzthiazide, Urea, mannitol, Ethacrynic acid, Cardiovascular Drugs – Ethylnitrite, Glycerol trinitrate, alpha methyl dopa, Guanethidine, Clofibrate, Quinidine.

Hypoglycemic Agents-Insulin, Chlorpropamide, Tolbutamide, Glibenclamide, Phenformin. Metformin Capsules and Anti coagulants-Lignocaine, Procaine, Benzocaine, Histamine and anti Histaminic Agent- Histamine, Diphenhydramine, Promethazine, cyproheptadine, Mepyramine, Pheniramine, Chlorpheniramine, Analgesics and Anti-pyretics-Morphine, Pethidine, Codeine, methadone, Aspirin, Paracetamol, Analgin, Dextropropoxyphene, Pentazonine. Non-steroidal anti-inflammatory agents. Indomethacin, Phenylbutazone, Oxyphenbutazone, Ibuprofen, Thyroxine and Antithyroids-Thyroxine, Methimazole, Nethyl thiouracil, Propylthiouracil. Diagnostic Agents- Lipoic Acid, Propylidone, Sulfobromophthalein-sodium, Indigotindisulfonate, Indigo Carmine, Evab blue, Cargo red, Fluorescein sodium. Anticonvulsants, cardiac glycosides, Antiarrhythmic. Antihypertensives & vitamins. Steroidal Drugs- Betamethasone, cortisone, Hydrocortisone, Prednisolone, Progesterone, Oestradiol, Nandrolone. Anti-Neoplastic Drugs – Actinomycin, Azathioprine, Busulphan, Chlorambucil, Cisplatin, Cyclophosphamide, Daunorubicin Hydrochloride, Fluorouracil, Mercaptopurine, Methotrexate, Mitomycin.

### **PHARMACOGNOSY**

History and scope of Pharmacology including indigenous system of medicine. Adulteration and drug evaluation; significance of pharmacopoeial standards. Occurrence, distribution organoleptic evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of following categories of drugs. (a) Laxatives – Aloes, Rhubarb, Castor oil, Ispaghula Senna. (b) Cardiotonics – Digitalis, Arjuna. (c) Carminatives & GI regulators – Umbelliferous fruits, Coriander, Fennel, Ajowan, Cardamom, Ginger, Black pepper, Asafoetida, Nutmeg, Cinnamon, Clove. (d) Astringents – Catechu. (e) Drugs acting on nervous system – Hyoscyamus, Belladonna, Aconite, Ashwagandha, ephedra, Opium, Cannabis, Nux-vomica. (f) Antihypertensive-Rauwolfia. (g) Antitussives – Vasaka, Tolu balsam, Tulsi. (h) Antirheumatics- Guggal, Colchicum. (i) Antitumour – Vinca, (j) Antileptics-Chaulmoogra oil. (k) Antidiabetics- Pterocarpus, Gymnema sylvestre. (l) Diuretics – Gokhru, Punarnava. (m) Antidysenterics- Ipecacuanha. (n) Antiseptics and disinfectants – Benzoin, Myrrh, Neem, Curcuma (o) Antimalarials – Cinchona. (p) Oxytocics – Ergot. (q) Vitamins- Shark liver oil and amla (r) Enzymes- Papaya, Dissate, Yeast. (s) perfume and flavouring agents- peppermint oil, Lemon oil, Orange oil, lemon grass oil, sandal wood. Miscellaneous – Licorice, Garlic, Picrorhiza, Dill, Linseed, shatavari, sankhpushpi, pyrethrum, Tobacco, Study of source, preparation and identification of fibres used in sutures and surgical dressings-cotton, silk, wool and regenerated fibres. Gross anatomical studies of -senna, Datura, cinchona, fennel, clove, ginger, Nuxvomica & ipecacuanha.

### **BIOCHEMISTRY AND CLINICAL PATHOLOGY**

Introduction to biochemistry. Brief chemistry and role of proteins, polypeptides and amino acids, classification, Qualitative tests, Biological value, Deficiency diseases. Carbohydrates: Brief chemistry and role of carbohydrates, classification, qualitative tests, Diseases related to carbohydrate metabolism. Lipids: Brief chemistry and role of lipids, classification and qualitative tests. Diseases related to lipids metabolism. Vitamins: Brief chemistry and role of vitamins and coenzymes. Role of minerals and water in life process. Enzymes: Brief concept of enzymatic action. Factors affecting it. Therapeutics: Introduction to pathology of blood and urine. Lymphocytes and platelets, their role in

health and disease. Erythrocytes-Abnormal cells and their significance. Abnormal constituents of urine and their significance in diseases.

## **HUMAN ANATOMY & PHYSIOLOGY**

Structure of cell, function of its components with special reference to mitochondria and microsomes. Elementary tissues: Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, connective tissue and nervous tissue. Skeletal System: Structure and function of Skeleton, Classification of joints and their function. Joint disorders. Cardiovascular System: Composition of blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of blood. Name and functions of lymph glands. Structure and functions of various parts of the heart. Arterial and venous system with special reference to the names and positions of main arteries and veins. Blood and its recording. Brief information about cardiovascular disorders. Respiratory system: Various parts of respiratory system and their functions, structure and functions of Kidney. Physiology of urine formation. Patho-physiology of renal diseases and edema. Muscular System: Structure of skeletal muscle, physiology of muscle contraction. Names, positions, attachments and functions of various skeletal muscles. Physiology of neuromuscular junction. Central Nervous System: Various parts of central nervous system, brain and its parts, functions and reflex action. Anatomy and physiology of automatic nervous system. Sensory Organs: elementary knowledge of structure and functions of the organs of taste, smell, ear, eye and skin. Physiology of pain. Digestive System: names of various parts of digestive system and their functions. Structure and functions of liver. Physiology of liver, physiology of digestion and absorption. Endocrine System: Endocrine glands and Hormones. Location of glands, their hormones and functions, Pituitary, Thyroid Adrenal and Pancreas. Reproductive system: Physiology and Anatomy of Reproductive system.

## **HEALTH EDUCATION AND COMMUNITY PHARMACY**

Concept of health: Definition of physical health, mental health, social health, spiritual health determinants of health, indicatory of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases. Nutrition and health: Classification of foods, requirements, diseases induced due to deficiency of proteins, vitamins and minerals-treatment and prevention. Demography and family planning: Demography cycle, fertility, family planning, contraceptive methods, behavioral methods, natural family planning methods, chemical methods, mechanical methods, hormonal contraceptives, population problem of India. First aid: Emergency treatment in shock, snake-bite, burns, poisoning, heart disease, fractures and resuscitation methods. Elements of minor surgery and dressings. Light solid waste disposal and control-medical entomology, arthropod borne diseases and their control. rodents, animals and diseases. Fundamental principles of microbiology: Classification of microbes, isolation, staining techniques of organisms of common diseases. Communicable diseases: Causative agents, mode of transmission and prevention. Respiratory infections, chicken pox, measles, influenza, diphtheria, whooping cough and tuberculosis. Intestinal infection-poliomyelitis, Hepatitis, cholera, Typhoid, food poisoning, Hookworm infection. Arthropod borne infections-plague, Malaria, filariases, Surface infection-Rabies, Trachoma, Tetanus, Leprosy, Sexually transmitted diseases-Syphilis, Gonorrhoea, AIDS. Non-communicable diseases: causive agents, prevention, care and control. Epidemiology: Its scope, methods, uses, dynamics of

disease transmission. Immunity and Immunization: Immunological products and their dose schedule. Principles of disease control and prevention, hospital acquired infection, prevention, prevention and control. Disinfection, types of disinfection procedures, for-faeces, urine, sputum, room linen, dead-bodies, instruments.

### **PHARMACOLOGY & TOXICOLOGY**

Routes of administration of drugs, their advantages and disadvantages. Various process of absorption of drugs and the factors affecting them. Metabolism, distribution and excretion of drugs. Pharmacological classification of drugs. Drugs acting on the central Nervous system. General anaesthetics – adjunction to anaesthesia, intravenous anaesthetics. Analgesic antipyretics and non-steroidal Anti-inflammatory drugs – Narcotic analgesics. Antirheumatic and anti-gout remedies. Sedatives and Hypnotics, psychopharmacological agents. Anticonvulsants, analeptics. Centrally acting muscle relaxants and anti parkinsonism agents. Local anaesthetics. Drugs acting on autonomic nervous system. Cholinergic drugs, Anticholinergic drugs, anticholinesterase drugs, Adrenergic drugs and adrenergic receptor blockers. Neurone blockers and ganglion blockers. Neuromuscular blockers, used in myasthenia gravis. Drugs acting on eye: Mydiatics drugs used in glaucoma. Drugs acting on respiratory system Respiratory stimuliants, Bronchodilators, nasal decongestants, Expectorants and Antitussive agents. Autocoids: physiological role of histamine and serotonin, Histamine and Antihistamines, prostaglandins. Cardio vascular drugs Cardiotonics, Antiarrhythmic agents, Anti-anginal agents, Antihypertensive agents, peripheral Vasodilators and drugs used in atherosclerosis. Drugs acting on the blood and blood forming organs. Haematinics, coagulants and anticoagulants, Haemostatic, Blood substitutes and plasma expanders. Drugs affecting renal function – Diuretics and anti diuretics. Hormones and hormone antagonists-Hypoglycemic agents, Anti-thyroid drugs, sex hormones and oral contraceptives, corticosteroids. Drugs acting on digestive system-carminatives, digest ants, Bitters, Antacids and drugs used in peptic ulcer, purgatives, and laxatives, Antidiarrhoeals, emetics, Anti-emetics, Antispasmodics. Chemotherapy of microbial diseases. Urinary antiseptics, sulphonamides, penicillin, streptomycin, Tetracyclines and other antibiotics. Antitubercular agents, Antifungal agents, antiviral drugs, antileprotic drugs. Chemotherapy of protozoal diseases, Anthelmintic drugs, Chemotherapy of cancer. Disinfectants and antiseptics.

### **PHARMACEUTICAL JURISPRUDENCE**

Origin and nature of pharmaceutical legislation in India, its scope and objectives. Principles and significance of professional Ethics. Critical study of the code of pharmaceutical Ethics drafted by Pharmacy Council of India. Pharmacy Act, 1948, Drugs and Cosmetics Act, 1940-General study of the Drugs and cosmetics Act and the Rules there under. Definitions and salient features related to retail and wholesale distribution of drugs. The powers of Inspectors, the sampling procedures and the procedure and formalities in obtaining licenses under the rule. Facilities to be provided for running a pharmacy effectively. General study of the schedules with special reference to schedules C, CI, F, G, J, H, P and X and salient features of labelling and storage conditions of drugs. The drugs and Magic Remedies (objectionable Advertisement) Act... Narcotic Drugs and psychotropic (substances Act, 1985- Brief introduction to the study of the following acts: Latest Drugs (price control) order in force. Poisons Act 1919 (as amended to date) Medicinal and Toilet preparations (Excise Duties) Act, 1955 (as amended to date). Medical Termination of Pregnancy Act, 1971 (as amended to date).

## **DRUG STORE & BUSINESS MANAGEMENT**

Introduction to Elements for Economics and Management. Forms of Business Organizations. Channels of Distribution. Drug House Management-selection of site, Space Lay-out and legal requirements. Importance and objectives of purchasing, selection of suppliers, credit information, tenders, contracts and price determination and legal requirements thereto. Codification, handling of drug stores and other hospital supplies. Inventory Control-objects and importance, modern techniques like ABC,VED analysis, the lead time, inventory carrying cost, safety stock, minimum and maximum stock levels, economic order quantity, scrap and surplus disposal. Banking and Finance-Service and functions of bank, Finance planning and sources of finance. Introduction to the accounting concepts and conventions. Double entry Book-keeping. Different kinds of accounts. Cash book, General Ledger and Trial Balance. Profit and Loss Account and Balance Sheet, simple techniques of analyzing financial statements. Introduction to Budgeting.

## **HOSPITAL & CLINICAL PHARMACOLOGY**

Hospital Pharmacy: Definition Functions and objectives of Hospital pharmaceutical services, Location, Layout, flow chart of materials and men. Personnel and facilities requirements including equipments based on individual and basic needs Requirements and abilities required for Hospital pharmacists. Drug Distribution system in Hospitals. Manufacturing, Economical considerations, estimation of demand. Nomenclature and uses of surgical instruments and Hospital Equipments and health accessories. PTC (Pharmacy Therapeutic Committee) Hospital Formulary system. Drug Information service and Drug Information Bulletin. Surgical dressing like cotton, gauze, bandages and adhesive tapes including their pharmacopoeial tests for quality. Other hospital supply eg.IV sets, BG sets, Ryals tubes, Catheters, Syringes etc. Introduction of Clinical pharmacy practice-Definition, scope, Modern dispensing aspects. Pharmacists and patient counselling and advice for the use of common drugs, medication history. Common daily terminology used in the practice of Medicine. Disease, manifestation and patho-physiology including salient symptoms to understand the disease like Tuberculosis, Hepatitis, Rheumatoid Arthritis, Cardio-vascular diseases, Epilepsy, Diabetes, Peptic Ulcer, Hypertension. Psychological parameters with their significance. Drug-drug interaction with reference to analgesics, diuretics, cardiovascular drugs, Gastro intestinal agents. Vitamins and Hypoglycemic agents. Drug-food interaction. Adverse Drug Reaction: Definition and significance. Drug-induced diseases and Teratogenicity. Drugs in Clinical Toxicity – Introduction, general treatment of poisoning, systemic antidotes, Treatment of insecticide poisoning, heavy metal poison, Narcotic drugs, Barbiturate, Organophosphorus poisons. Drug dependences, drug abuse, addictive drugs and their treatment complications. Bio-availability of drugs, including factors affecting it.

**Controller of Examinations  
Kerala Devaswom Recruitment Board**

**Note:- It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualifications of the post may also appear in the question paper. There is no undertaking that all the topics mentioned above may be covered in the question paper.**



