

પ્રાથમિક કસોટીનો અભ્યાસક્રમ

પ્રશ્નપત્ર-૧

જા.ક. ૭૨/૨૦૨૦-૨૧ પ્રવર ઔષધ નિરીક્ષક, વર્ગ-૨

માધ્યમ: ગુજરાતી

કુલ ગુણ :૧૦૦

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| ૧ | ભારતની ભૂગોળ- ભૌગોલિક, આર્થિક, સામાજિક, કુદરતી સંસાધન અને વસ્તી અંગેની બાબતો- ગુજરાતના ખાસ સંદર્ભ સાથે   |
| ૨ | ભારતનો સાંસ્કૃતિક વારસો- સાહિત્ય, કલા, ધર્મ અને સ્થાપત્યો- ગુજરાતના ખાસ સંદર્ભ સાથે  |
| ૩ | ભારતનો ઇતિહાસ- ગુજરાતના ખાસ સંદર્ભ સાથે  |
| ૪ | ભારતની અર્થવ્યવસ્થા અને આયોજન  |
| ૫ | <p><u>ભારતીય રાજનીતિ અને ભારતનું બંધારણ:</u></p> <p>(૧) આમુખ<br/>                 (૨)મૂળભૂત અધિકારો અને ફરજો<br/>                 (૩)રાજ્યનીતિના માર્ગદર્શક સિદ્ધાંતો<br/>                 (૪)સંસદની રચના<br/>                 (૫)રાષ્ટ્રપતિની સત્તા<br/>                 (૬)રાજ્યપાલની સત્તા<br/>                 (૭)ન્યાયતંત્ર<br/>                 (૮)અનુસૂચિત જાતિ, અનુસૂચિત જનજાતિ અને સમાજના પછાત વર્ગો માટેની જોગવાઈઓ<br/>                 (૯)એટર્ની જનરલ<br/>                 (૧૦)નીતિ આયોગ<br/>                 (૧૧) પંચાયતી રાજ<br/>                 (૧૨) નાણા પંચ<br/>                 (૧૩) બંધારણીય તથા વૈધનિકસંસ્થાઓ- ભારતનું ચૂંટણી પંચ, સંઘ લોક સેવા આયોગ, રાજ્ય લોક સેવા આયોગ, કોમ્પ્ટ્રોલર એન્ડ ઓડિટર જનરલ; કેન્દ્રીયસતર્કતા આયોગ, લોકપાલ તથા લોકાયુક્ત અને કેન્દ્રીય માહિતી આયોગ</p> |
| ૬ | સામાન્ય બૌદ્ધિક ક્ષમતા કસોટી   |
| ૭ | સામાન્ય વિજ્ઞાન, પર્યાવરણ અને ઈન્ફર્મેશન એન્ડ કોમ્યુનિકેશન ટેકનોલોજી   |
| ૮ | ખેલ જગત સહિત રોજબરોજના પ્રાદેશિક, રાષ્ટ્રીય અને આંતરરાષ્ટ્રીય મહત્વના બનાવો  |

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| Syllabus of Preliminary Test<br>Paper-1<br>Adv. No. 72/2020-21 Senior Drug Inspector Class II |  |
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| Medium:Gujarati   | Total Marks- 100   |
| 1   | Geography of India-Physical, Economic, Social, Natural Resources and population related topics- with special reference to Gujarat  |
| 2   | Cultural heritage of India-Literature, Art, Religion and Architecture- with special reference to Gujarat   |
| 3   | History of India with special reference to Gujarat   |
| 4   | Indian Economy and Planning  |
| 5   | <u>Indian Polity and the Constitution of India:</u><br>(1) Preamble<br>(2) Fundamental Rights and Fundamental Duties<br>(3) Directive Principles of State Policy<br>(4) Composition of Parliament<br>(5) Powers of the President of India<br>(6) Powers of Governor<br>(7) Judiciary<br>(8) Provisions for Scheduled Castes, Scheduled Tribes and backward classes of the society<br>(9) Attorney General<br>(10) NITI Aayog<br>(11) Panchayati Raj Institutions<br>(12) Finance Commission<br>(13) Constitutional and Statutory Bodies: Election Commission of India, Union Public Service Commission, State Public Service Commission, Comptroller and Auditor General; Central Vigilance Commission, Lokpal and Lokayukta, Central Information Commission |
| 6   | General Mental Ability   |
| 7   | General Science, Environment and Information & Communication Technology  |
| 8   | Daily events of Regional, National and International Importance including Sports   |

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## PART-2

### **Syllabus for the Preliminary Test for the recruitment of the Post of Senior Drug Inspector, Class-2 (Gujarat Drugs Service) (Adv.No. 72/2020-21)**

**Total questions: 200**

**Medium: English**

**Total Marks 200**

#### **1. HUMAN ANATOMY AND PHYSIOLOGY**

Introduction to human body, Cellular level of organization, Tissue level of organization, Integumentary system, Skeletal system, Joints, Body fluids and blood, Lymphatic system, Peripheral nervous system, Special senses, Cardiovascular system, Nervous system, Digestive system, Energetics, Respiratory system, Urinary system, Endocrine system, Reproductive system, Introduction to genetics

#### **2. PHARMACEUTICS**

Historical background and development of profession of pharmacy, Dosage forms, Prescription, Posology, Pharmaceutical calculations, Powders, Liquid dosage forms, Monophasic liquids, Biphasic liquids, Suspensions, Emulsions, Suppositories, Pharmaceutical incompatibilities, Semisolid dosage forms

#### **3. PHARMACEUTICAL INORGANIC CHEMISTRY**

Impurities in pharmaceutical substances; Acids, Bases and Buffers; Major extra and intracellular electrolytes, Dental products, Gastrointestinal agents, Miscellaneous compounds, Radiopharmaceuticals

#### **4. PHARMACEUTICAL ORGANIC CHEMISTRY**

Classification, nomenclature and isomerism; Alkanes, Alkenes and Conjugated dienes; Alkyl halides, Alcohols, Carbonyl compounds, Carboxylic acids, Aliphatic amines, Benzene and its derivatives, Phenols, Aromatic Amines, Aromatic Acids, Fats and Oils, Polynuclear hydrocarbons, Cyclo alkanes, Stereo isomerism, Optical isomerism, Geometrical isomerism, Heterocyclic compounds

#### **5. BIOCHEMISTRY**

Biomolecules, Bioenergetics, Carbohydrate metabolism, Biological oxidation, Lipid metabolism, Amino acid metabolism, Nucleic acid metabolism and genetic information transfer, Enzymes

## **6. PATHOPHYSIOLOGY**

Basic principles of Cell injury and Adaptation, Basic mechanism involved in the process of inflammation and repair, Cardiovascular System, Respiratory system, Renal system, Haematological Diseases, Endocrine system, Nervous system, Gastrointestinal system, inflammatory bowel diseases, jaundice, hepatitis (A,B,C,D,E,F) alcoholic liver disease, Disease of bones and joints, Principles of cancer, Diseases of bones and joints, Principles of Cancer, Infectious diseases, Sexually transmitted diseases

## **7. PHYSICAL PHARMACEUTICS**

Solubility of drugs, States of Matter and properties of matter, Physicochemical properties of drug molecules, Surface and interfacial phenomenon, Complexation and protein binding, pH, buffers and Isotonic solutions, Colloidal dispersions, Rheology, Deformation of solids, Coarse dispersion, Micromeretics, Drug stability

## **8. PHARMACEUTICAL MICROBIOLOGY**

Introduction, history of microbiology, its branches, scope and its importance, Introduction to Prokaryotes and Eukaryotes, Study of ultra-structure and morphological classification of bacteria, nutritional requirements, raw materials used for culture media and physical parameters for growth, growth curve, isolation and preservation methods for pure cultures, cultivation of anaerobes, quantitative measurement of bacterial growth (total & viable count). Study of different types of phase contrast microscopy, dark field microscopy and electron microscopy.

Identification of bacteria using staining techniques (simple, Gram's & Acid fast staining) and biochemical tests (IMViC). Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous, radiation and mechanical method of sterilization. Evaluation of the efficiency of sterilization methods. Equipments employed in large scale sterilization. Sterility indicators.

Study of morphology, classification, reproduction/replication and cultivation of Fungi and Viruses. Classification and mode of action of disinfectants Factors influencing disinfection, antiseptics and their evaluation. For bacteriostatic and bactericidal actions Evaluation of bactericidal & Bacteriostatic. Sterility testing of products (solids, liquids, ophthalmic and other sterile products) according to IP, BP and USP.

Designing of aseptic area, laminar flow equipments; study of different sources of contamination in an aseptic area and methods of prevention, clean area classification.

Principles and methods of different microbiological assay. Methods for standardization of antibiotics, vitamins and amino acids. Assessment of a new antibiotic.

Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage. Preservation of pharmaceutical products using antimicrobial agents, evaluation of microbial stability of formulations. Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures. Application of cell cultures in pharmaceutical industry and research.

## **9. PHARMACEUTICAL ENGINEERING**

Flow of fluids, Size Reduction, Size Separation, Heat Transfer, Evaporation, Distillation, Drying, Mixing, Filtration, Centrifugation, Materials of pharmaceutical plant construction, Corrosion and its prevention

## **10. MEDICINAL CHEMISTRY**

Introduction to Medicinal Chemistry, History and development of medicinal chemistry, Physicochemical properties in relation to biological action, Drug metabolism, Drugs acting on Autonomic Nervous System, Adrenergic Neurotransmitters, Sympathomimetic agents: SAR of Sympathomimetic agents, Adrenergic Antagonists, Cholinergic neurotransmitters, Parasympathomimetic agents: SAR of Parasympathomimetic agents, Direct acting agents, Indirect acting/Cholinesterase inhibitors (Reversible & Irreversible), Cholinesterase reactivator, Cholinergic Blocking agents, Solanaceous alkaloids and analogues, Synthetic cholinergic blocking agents, Drugs acting on Central Nervous System, Antihistaminic agents, H<sub>1</sub>-antagonists, H<sub>2</sub>-antagonists, Gastric Proton pump inhibitors, Anti-neoplastic agents, Alkylating agents, Antimetabolites, Antibiotics, Plant products, Anti-anginal, Vasodilators, Calcium channel blockers, Diuretics, Anti-hypertensive Agents, Anti-arrhythmic Drugs, Anti-hyperlipidemic agents, Coagulant & Anticoagulants, Drugs used in Congestive Heart Failure, Drugs acting on Endocrine system, Sex hormones, Drugs for erectile dysfunction, Oral contraceptives, Corticosteroids, Thyroid and antithyroid drugs, Antidiabetic agents, Local Anesthetics, Benzoic Acid derivatives, Amino Benzoic acid derivatives, Lidocaine/Anilide derivatives, Antibiotics,  $\beta$ -Lactam antibiotics, Aminoglycosides, Tetracyclines, Macrolide, Prodrugs, Antimalarials, Quinolines, Biguanides and dihydro triazines, Anti-tubercular Agents, Synthetic anti tubercular agents, Anti

tubercular antibiotics, Urinary tract anti-infective agents, Antiviral agents, Antifungal agents, Antifungal antibiotics, Synthetic Antifungal agents, Anti-protozoal Agents, Anthelmintics, Sulphonamides and Sulfones, Folate reductase inhibitors, Introduction to Drug Design, Combinatorial Chemistry,

## **11. PHARMACOLOGY**

General Pharmacology, Introduction to Pharmacology, Pharmacokinetics, Pharmacodynamics, Adverse drug reactions, Drug interactions, Drug discovery and clinical evaluation of new drugs, Pharmacology of drugs acting on peripheral nervous system, Pharmacology of drugs acting on central nervous system, Pharmacology of drugs acting on cardio vascular system, Pharmacology of drugs acting on urinary system, Autocoids and related drugs, Pharmacology of drugs acting on endocrine system, Bioassay, Pharmacology of drugs acting on Respiratory system, Pharmacology of drugs acting on the Gastrointestinal Tract, Chemotherapy, Immunopharmacology, Principles of toxicology, Chronopharmacology,

## **12. PHARMACOGNOSY AND PHYTOCHEMISTRY**

Introduction to Pharmacognosy, Classification of drugs, Quality control of Drugs of Natural Origin; Cultivation, Collection, Processing and storage of drugs of natural origin; Conservation of medicinal plants, Plant tissue culture, Pharmacognosy in various systems of medicine, Introduction to secondary metabolites, Plant Products, Primary metabolites, Carbohydrates, Proteins and Enzymes, Lipids(Waxes, fats, fixed oils), Marine Drugs, Metabolic pathways in higher plants and their determination, Alkaloids, Phenylpropanoids and Flavonoids, Steroids, Cardiac Glycosides & Triterpenoids, Volatile oils, Tannins, Resins, Glycosides, Iridoids, Other terpenoids & Naphthaquinones, Isolation, Identification and Analysis of Phytoconstituents, Basics of Phytochemistry

## **13. INDUSTRIAL PHARMACY**

Preformulation Studies, Tablets, Liquid orals, Capsules, Pellets, Parenteral Products, Ophthalmic Preparations, Cosmetics, Pharmaceutical Aerosols, Packaging Materials Science, Pilot plant scale up techniques, Technology development and transfer, Regulatory affairs, Regulatory requirements for drug approval, Quality management systems, Indian Regulatory Requirements

## **14. HERBAL DRUG TECHNOLOGY**

Herbs as raw materials, Biodynamic Agriculture, Indian Systems of Medicine, Nutraceuticals, Herbal-Drug and Herb-Food Interactions, Herbal Cosmetics, Herbal excipients, Herbal formulations, Evaluation of Drugs, Patenting and Regulatory requirements of natural products, Regulatory Issues, General Introduction to Herbal Industry, Good Manufacturing Practice of Indian systems of medicine

## **15. PHARMACEUTICAL BIOTECHNOLOGY**

Introduction to Biotechnology with reference to Pharmaceutical Science, Enzyme Biotechnology. Biosensors, Protein Engineering, microbes, Enzymes, genetic engineering, Study of cloning vectors, restriction endonucleases and DNA ligase, Recombinant DNA technology, Application of r DNA technology, Interferon ii) Vaccines- hepatitis- B iii) Hormones-Insulin, Brief introduction to PCR, Types of immunity, Structure of Immunoglobulins, Structure and Function of MHC, Hypersensitivity reactions, Immune stimulation and Immune suppressions, General method of the preparation of bacterial vaccines, toxoids, viral vaccine, antitoxins, serum-immune blood derivatives and other products relative to immunity, Storage conditions and stability of official vaccines, Hybridoma technology, Blood products and Plasma Substitutes, Immuno blotting techniques, Genetic organization of Eukaryotes and Prokaryotes, Microbial genetics including transformation, transduction, conjugation, plasmids and Transposons, Introduction to Microbial biotransformation and applications, Mutation: Types of mutation/mutants, Fermentation methods and general requirements, study of media, equipments, sterilization methods, aeration process, stirring, Large scale production fermenter design and its various controls, Study of the production of - penicillins, citric acid, Vitamin B12, Glutamic acid, Griseofulvin, Blood Products

## **16. COSMETIC SCIENCE**

Classification of cosmetic and cosmeceutical products, Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs, Cosmetic excipients, Skin, Hair, Oral Cavity, Principles of formulation and building blocks of skin care products, Antiperspirants & deodorants, Principles of formulation and building blocks of Hair care products, Sun protection, Classification of Sunscreens and SPF, Role of herbs in cosmetics, Analytical cosmetics, Principles of Cosmetic Evaluation: Principles of sebumeter, corneometer. Measurement of TEWL, Skin Color, Hair tensile strength, Hair combing properties Soaps, and syndet bars. Evolution and skin benefits. Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic,

dermatitis. Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor. Antiperspirants and Deodorants- Actives and mechanism of action

## **17. PHARMACEUTICAL JURISPRUDENCE**

- a) Drugs and Cosmetics Act, 1940 and its rules 1945
- b) Pharmacy Act –1948:
- c) Narcotic Drugs and Psychotropic substances Act-1985 and Rules
- d) Study of Salient Features of Drugs and Magic Remedies Act and its rules
- e) Prevention of Cruelty to animals Act-1960
- f) National Pharmaceutical Pricing Authority
- g) Code of Pharmaceutical ethics
- h) Right to Information Act, 2005
- i) Introduction to Intellectual Property Rights (IPR)

## **18. USE OF ARTIFICIAL INTELLIGENCE IN DRUG DISCOVERY**

## **19. CURRENT TRENDS AND RECENT ADVANCEMENT IN THE RELEVANT FIELD**