

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma to Degree Common Entrance Test

DDCET (Pharmacy) Exam Syllabus

Program	Paper Number	Paper	No. of question	Maximum Marks	Time Duration
Pharmacy	BPH 01	Basic of Pharmacy	80	160	150 Min. (Two & Half Hours)
	BPH 02	Aptitude Test (Soft Skill)	20	40	
		Total	100	200	

(A) BPH 01: Basics of Pharmacy 160 marks

1) Pharmaceutics: weightage 32 marks

Sr. No	Topics
1.	<ul style="list-style-type: none"> • History of the profession of Pharmacy in India in relation to Pharmacy education, industry, pharmacy practice, and various professional associations. • Pharmacy as a career • Pharmacopoeia: Introduction to IP, BP, USP, NF and Extra Pharmacopoeia. Salient features of Indian Pharmacopoeia
2.	Packaging materials: Types, selection criteria, advantages and disadvantages of glass, plastic, metal, rubber as packaging materials
3.	Pharmaceutical aids: Organoleptic (Colouring, flavouring, and sweetening) agents Preservatives: Definition, types with examples and uses
4.	Unit operations: Definition, objectives/applications, principles, construction, and workings of: Size reduction: hammer mill and ball mill Size separation: Classification of powders according to IP, Cyclone separator, Sieves and standards of sieves Mixing: Double cone blender, Turbine mixer, Triple roller mill and Silvers on mixer homogenizer Filtration: Theory of filtration, membrane filter and sintered glass filter Drying: working of fluidized bed dryer and process of freeze drying Extraction: Definition, Classification, method, and applications
5.	Tablets – coated and uncoated, various modified tablets (sustained release, Extended-release, fast dissolving, multi-layered, etc.)
6	Capsules - hard and soft gelatine capsules
7	Liquid oral preparations - solution, syrup, elixir, emulsion, suspension, dry powder for reconstitution
8	Topical preparations - ointments, creams, pastes, gels, liniments and lotions, suppositories, and pessaries
9	Nasal preparations, Ear preparations

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10	Powders and granules - Insufflations, dusting powders, effervescent powders, and effervescent granules
11	Sterile formulations – Injectables, eye drops and eye ointments
12	Immunological products: Sera, vaccines, toxoids, and their manufacturing methods.
13	Basic structure, layout, sections, and activities of pharmaceutical manufacturing plants Quality control and quality assurance: Definition and concepts of quality control and quality assurance, current good manufacturing practice (cGMP), Introduction to the concept of calibration and validation
14	Novel drug delivery systems: Introduction, Classification with examples, advantages, and challenges

2) **Pharmaceutical Chemistry: weightage 32 marks**

Sr No	Topics
1.	Introduction to Pharmaceutical chemistry: Scope and objectives Sources and types of errors: Accuracy, precision, significant figures Impurities in Pharmaceuticals: Source and effect of impurities in Pharmacopoeial substances, importance of limit test, Principle and procedures of Limit tests for chlorides, sulphates, iron, heavy metals and arsenic.
2.	Volumetric analysis: Fundamentals of volumetric analysis, Acid-base titration, non-aqueous titration, precipitation titration, complexometric titration, redox titration Gravimetric analysis: Principle and method.
3.	Inorganic Pharmaceuticals: Pharmaceutical formulations, market preparations, storage conditions and uses of <ul style="list-style-type: none"> ● Haematinics: Ferrous sulphate, Ferrous fumarate, Ferric ammonium citrate, Ferrous ascorbate, Carbonyl iron ● Gastro-intestinal Agents: Antacids :Aluminium hydroxide gel, Magnesium hydroxide, Magaldrate, Sodium bicarbonate, Calcium Carbonate, Acidifying agents, Adsorbents, Protectives, Cathartics ● Topical agents: Silver Nitrate, Ionic Silver, Chlorhexidine Gluconate, Hydrogen peroxide, Boric acid, Bleaching powder, Potassium permanganate ● Dental products: Calcium carbonate, Sodium fluoride, Denture cleaners, Denture adhesives, Mouth washes ● Medicinal gases: Carbon dioxide, nitrous oxide, oxygen
4.	Introduction to nomenclature of organic chemical systems with particular reference to heterocyclic compounds containing up to Three rings
Study of the following category of medicinal compounds with respect to classification, chemical name, chemical structure (compounds marked with*) uses, stability and storage conditions, different types of formulations and their popular brand names	

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5	<p>Drugs Acting on Central Nervous System</p> <ul style="list-style-type: none">• Anaesthetics: Thiopental Sodium*, Ketamine Hydrochloride*, Propofol• Sedatives and Hypnotics: Diazepam*, Alprazolam*, Nitrazepam, Phenobarbital*• Antipsychotics: Chlorpromazine Hydrochloride*, Haloperidol*, Risperidone*, Sulpiride*, Olanzapine, Quetiapine, Lurasidone• Anticonvulsants: Phenytoin*, Carbamazepine*, Clonazepam, Valproic Acid*, Gabapentin*, Topiramate, Vigabatrin, Lamotrigine• Anti-Depressants: Amitriptyline Hydrochloride*, Imipramine Hydrochloride*, Fluoxetine*, Venlafaxine, Duloxetine, Sertraline, Citalopram, Escitalopram, Fluvoxamine, Paroxetine
6	<p>Drugs Acting on Autonomic Nervous System</p> <ul style="list-style-type: none">• Sympathomimetic Agents: <i>Direct Acting:</i> Nor-Epinephrine*, Epinephrine, Phenylephrine, Dopamine*, Terbutaline, Salbutamol (Albuterol), Naphazoline*, Tetrahydrozoline. <i>Indirect Acting Agents:</i> Hydroxy Amphetamine, Pseudoephedrine. Agents With Mixed Mechanism: Ephedrine, Metaraminol• Adrenergic Antagonists: Alpha Adrenergic Blockers: Tolazoline, Phentolamine• Phenoxybenzamine, Prazosin. Beta Adrenergic Blockers: Propranolol*, Atenolol*, Carvedilol• Cholinergic Drugs and Related Agents: Direct Acting Agents: Acetylcholine*, Carbachol, And Pilocarpine. Cholinesterase Inhibitors: Neostigmine*, Edrophonium Chloride, Tacrine Hydrochloride, Pralidoxime Chloride, Echothiopate Iodide• Cholinergic Blocking Agents: Atropine Sulphate*, Ipratropium Bromide <i>Synthetic Cholinergic Blocking Agents:</i> Tropicamide, Cyclopentolate Hydrochloride, Clidinium Bromide, Dicyclomine Hydrochloride*
7	<p>Drugs Acting on Cardiovascular System</p> <ul style="list-style-type: none">• Anti-Arrhythmic Drugs: Quinidine Sulphate, Procainamide Hydrochloride, Verapamil, Phenytoin Sodium*, Lidocaine Hydrochloride, Lorcaïnide Hydrochloride, Amiodarone and Sotalol• Anti-Hypertensive Agents: Propranolol*, Captopril*, Ramipril, Methyldopate Hydrochloride, Clonidine Hydrochloride, Hydralazine Hydrochloride, Nifedipine,• Antianginal Agents: Isosorbide Dinitrate
8	<p>Diuretics: Acetazolamide, Frusemide*, Bumetanide, Chlorthalidone, Benzthiazide, Metolazone, Xipamide, Spironolactone</p>
9	<p>Hypoglycemic Agents: Insulin and Its Preparations, Metformin* Glibenclamide*, Glimperide, Pioglitazone, Repaglinide, Gliflozins, Gliptins</p>
10	<p>Analgesic And Anti-Inflammatory Agents: Morphine Analogues, Narcotic Antagonists; <i>Nonsteroidal Anti-Inflammatory Agents (NSAIDs)</i> - Aspirin*, Diclofenac, Ibuprofen*, Piroxicam, Celecoxib, Mefenamic Acid, Paracetamol*, Aceclofenac</p>

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11	<p>Anti-Infective Agents</p> <ul style="list-style-type: none"> ● Antifungal Agents: Amphotericin-B, Griseofulvin, Miconazole, Ketoconazole*, Itraconazole, Fluconazole*, Naftifine Hydrochloride ● Urinary Tract Anti-Infective Agents: Norfloxacin, Ciprofloxacin, Ofloxacin*, Moxifloxacin, ● Anti-Tubercular Agents: INH*, Ethambutol, Para Amino Salicylic Acid, Pyrazinamide, Rifampicin, Bedaquiline, Delamanid, Pretomanid* ● Antiviral Agents: Amantadine Hydrochloride, Idoxuridine, Acyclovir*, Foscarnet, Zidovudine, Ribavirin, Remdesivir, Favipiravir ● Antimalarials: Quinine Sulphate, Chloroquine Phosphate*, Primaquine Phosphate, Mefloquine*, Cycloguanil, Pyrimethamine, Artemisinin ● Sulfonamides: Sulfanilamide, Sulfadiazine, Sulfamethoxazole, Sulfacetamide*, Mafenide Acetate, Cotrimoxazole, Dapsone*
12	<p>Antibiotics: Penicillin G, Amoxicillin*, Cloxacillin, Streptomycin, Tetracyclines: Doxycycline, Minocycline, Macrolides: Erythromycin, Azithromycin, Miscellaneous: Chloramphenicol* Clindamycin</p>
13	<p>Anti-Neoplastic Agents: Cyclophosphamide*, Busulfan, Mercaptopurine, Fluorouracil*, Methotrexate, Dactinomycin, Doxorubicin Hydrochloride, Vinblastine Sulphate, Cisplatin*, Dromostanolone Propionate</p>

3) Pharmacognosy: weightage 32 marks

Sr No	Topic		
1	Definition, history, present status and scope of Pharmacognosy		
2	<p>Classification of drugs:</p> <ul style="list-style-type: none"> ● Alphabetical ● Taxonomical ● Morphological ● Pharmacological ● Chemical ● Chemo-taxonomical 		
3	<p>Quality control of crude drugs:</p> <ul style="list-style-type: none"> ● Different methods of adulteration of crude drugs ● Evaluation of crude drugs 		
4	Brief outline of occurrence, distribution, isolation, identification tests, therapeutic activity and pharmaceutical applications of alkaloids, terpenoids, glycosides, volatile oils, tannins and resins.		
5	Biological source, chemical constituents and therapeutic efficacy of the following categories of crude drugs.		
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Laxatives</td> <td>Aloe, Castor oil, Ispaghula, Senna</td> </tr> </table>	Laxatives	Aloe, Castor oil, Ispaghula, Senna
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	Cardiotonic	Digitalis, Arjuna
	Carminatives and G.I. regulators	Coriander, Fennel, Cardamom, Ginger, Clove, Black Pepper, Asafoetida, Nutmeg, Cinnamon
	Astringents	Myrobalan, Black Catechu, Pale Catechu
	Drugs acting on nervous system	Hyoscyamus, Belladonna, Ephedra, Opium, Tea leaves, Coffee seeds, Coca
	Anti-hypertensive	Rauwolfia
	Anti-tussive	Vasaka, Tolu Balsam
	Anti-rheumatics	Colchicum seed
	Anti-tumour	Vinca, Podophyllum
	Antidiabetics	Pterocarpus, Gymnema
	Diuretics	Gokhru, Punarnava
	Anti-dysenteric	Ipecacuanha
	Antiseptics and disinfectants	Benzoin, Myrrh, Neem, Turmeric
	Antimalarials	Cinchona, Artemisia
	Oxytocic	Ergot
	Vitamins	Cod liver oil, Shark liver oil
	Enzymes	Papaya, Diastase, Pancreatin, Yeast
	Pharmaceutical Aids	Kaolin, Lanolin, Beeswax, Acacia, Tragacanth, Sodium alginate, Agar, Guar gum, Gelatine
	Miscellaneous	Squill, Galls, Ashwagandha, Tulsi, Guggul
6	Plant fibres used as surgical dressings:	Cotton, silk, wool and regenerated fibres Sutures – Surgical Catgut and Ligatures
7	<ul style="list-style-type: none"> • Basic principles involved in the traditional systems of medicine like: Ayurveda, Siddha, Unani and Homeopathy • Method of preparation of Ayurvedic formulations like: Arista, Asava, Gutika, Taila, Churna, Lehya and Bhasma 	
8	Role of medicinal and aromatic plants in national economy and their export potential	
9	Herbs as health food:	Brief introduction and therapeutic applications of: Nutraceuticals, Antioxidants, Probiotics, Pre-biotics, Dietary fibres, Omega-3-fatty acids, Spirulina, Carotenoids, Soya and Garlic
10	Introduction to herbal formulations	
11	Herbal cosmetics:	Sources, chemical constituents, commercial preparations, therapeutic and cosmetic uses of: Aloe vera gel, Almond oil, Lavender oil, Olive oil, Rosemary oil, Sandal Wood oil
12	Phytochemical investigation of drugs	

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4) Human Anatomy and Physiology: weightage 32 marks

Sr No	Topic
1	Scope of Anatomy and Physiology. Definition of various terminologies
2	Structure of Cell: Components and its functions
3	Tissues of the human body: Epithelial, Connective, Muscular and Nervous tissues–their sub-types and characteristics.
4	Osseous system: structure and functions of bones of axial and appendicular skeleton Classification, types and movements of joints, disorders of joints
5	Haemopoietic system <ul style="list-style-type: none"> • Composition and functions of blood • Process of Hemopoiesis • Characteristics and functions of RBCs, WBCs, and platelets • Mechanism of Blood Clotting • Importance of Blood groups
6	Lymphatic system <ul style="list-style-type: none"> • Lymph and lymphatic system, composition, function and its formation. • Structure and functions of spleen and lymph node.
7	Cardiovascular system <ul style="list-style-type: none"> • Anatomy and Physiology of heart • Blood vessels and circulation (Pulmonary, coronary and systemic circulation) • Cardiac cycle and Heart sounds, Basics of ECG • Blood pressure and its regulation
8	Respiratory system <ul style="list-style-type: none"> • Anatomy of respiratory organs and their functions. • Regulation, and Mechanism of respiration. • Respiratory volumes and capacities – definitions
9	Digestive system <ul style="list-style-type: none"> • Anatomy and Physiology of the GIT • Anatomy and functions of accessory glands • Physiology of digestion and absorption
10	Skeletal muscles <ul style="list-style-type: none"> • Histology • Physiology of muscle contraction • Disorder of skeletal muscles
11	Nervous system <ul style="list-style-type: none"> • Classification of nervous system • Anatomy and physiology of cerebrum, cerebellum, mid brain • Function of hypothalamus, medulla oblongata and basal ganglia • Spinal cord-structure and reflexes • Names and functions of cranial nerves. • Anatomy and physiology of sympathetic and parasympathetic nervous system (ANS)

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12	Sense organs - Anatomy and physiology of <ul style="list-style-type: none"> • Eye • Ear • Skin • Tongue • Nose
13	Urinary system <ul style="list-style-type: none"> • Anatomy and physiology of urinary system • Physiology of urine formation • Renin - angiotensin system • Clearance tests and micturition
14	Endocrine system (Hormones and their functions) <ul style="list-style-type: none"> • Pituitary gland • Adrenal gland • Thyroid and parathyroid gland • Pancreas and gonads
15	Reproductive system <ul style="list-style-type: none"> • Anatomy of male and female reproductive system • Physiology of menstruation • Spermatogenesis and Oogenesis • Pregnancy and parturition

5) Social Pharmacy: weightage 32 marks

Sr No	Topic
1	Introduction to Social Pharmacy <ul style="list-style-type: none"> • Definition and Scope. Social Pharmacy as a discipline and its scope in improving the public health. Role of Pharmacists in Public Health. • Concept of Health -WHO Definition, various dimensions, determinants, and health indicators. • National Health Policy – Indian perspective • Public and Private Health System in India, National Health Mission • Introduction to Millennium Development Goals, • Sustainable Development Goals, FIP Development Goals

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2	<p>Preventive healthcare – Role of Pharmacists in the following</p> <ul style="list-style-type: none">• Demography and Family Planning.• Mother and child health, importance of breastfeeding, ill effects of infant milk substitutes and bottle feeding• Overview of Vaccines, types of immunity and immunization• Effect of Environment on Health – Water pollution, importance of safe drinking water, waterborne diseases, air pollution, noise pollution, sewage and solid waste disposal, occupational illnesses, Environmental pollution due to pharmaceuticals• Psychosocial Pharmacy: Drugs of misuse and abuse – psychotropics, narcotics, alcohol, tobacco products. Social Impact of these habits on social health and• productivity and suicidal behaviours
3	<p>Nutrition and Health</p> <ul style="list-style-type: none">• Basics of nutrition – Macronutrients and Micronutrients• Importance of water and fibres in diet• Balanced diet, Malnutrition, nutrition deficiency diseases, ill effects of junk foods, calorific and nutritive values of various foods, fortification of food• Introduction to food safety, adulteration of foods, effects of artificial ripening, use of pesticides, genetically modified foods.• Dietary supplements, nutraceuticals, food supplements – indications, benefits, Drug-Food Interactions
4	<p>Introduction to Microbiology and common microorganisms</p> <p>Epidemiology: Introduction to epidemiology, and its applications. Understanding of terms such as epidemic, pandemic, endemic, mode of transmission, outbreak, quarantine, isolation, incubation period, contact tracing, morbidity, mortality.</p> <p>Causative agents, epidemiology and clinical presentations and Role of Pharmacists in educating the public in prevention of the following communicable diseases:</p> <ul style="list-style-type: none">• Respiratory infections – chickenpox, measles, rubella, mumps, influenza (including Avian-Flu, H1N1, SARS, MERS, COVID- 19), diphtheria, whooping cough, meningococcal meningitis, acute respiratory infections, tuberculosis, Ebola• Intestinal infections – poliomyelitis, viral hepatitis, cholera, acute diarrheal diseases, typhoid, amebiasis, worm infestations, food poisoning• Arthropod-borne infections - dengue, malaria, filariasis and, chikungunya• Surface infections – trachoma, tetanus, leprosy• STDs, HIV/AIDS
5	<p>Introduction to health systems and all ongoing National Health programs in India, their objectives, functioning, outcome, and the role of pharmacists.</p>
6	<p>Pharmacoeconomics – Introduction, basic terminologies, importance of pharmacoeconomics</p>

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(B) BPH 02 : Aptitude Test (Soft skill)

40 marks

Sr No	Topics
1	<p>Communication Skills: Introduction, Definition, The Importance of Communication, The Communication Process – Source, Message, Encoding, Channel, Decoding, Receiver, Feedback, Context , Barriers to communication: Physiological Barriers, Physical Barriers, Cultural Barriers, Language Barriers, Gender Barriers, Interpersonal Barriers, Psychological Barriers, Emotional barriers, Perspectives in Communication: Introduction, Visual Perception, Language, Other factors affecting our perspective - Past Experiences, Prejudices, Feelings, Environment</p>
2	<p>Elements of Communication: Introduction, Face to Face Communication - Tone of Voice, Body Language (Non-verbal communication), Verbal Communication, Physical Communication</p> <p>Communication Styles: Introduction, The Communication Styles Matrix with example for each -Direct Communication Style, Spirited Communication Style, Systematic Communication Style, Considerate Communication Style</p>
3	<p>Basic Listening Skills: Introduction, Self-Awareness, Active Listening, Becoming an Active Listener, Listening in Difficult Situations</p> <p>Effective Written Communication: Introduction, When and When Not to Use Written Communication - Complexity of the Topic, Amount of Discussion' Required, Shades of Meaning, Formal Communication</p> <p>Writing Effectively: Subject Lines, Put the Main Point First, Know Your Audience, Organization of the Message</p>
4.	<p>Web technologies: Introduction to HTML, XML, CSS and Programming languages, introduction to web servers and Server Products. Introduction to databases, MYSQL, MS ACCESS, Pharmacy Drug database</p>
5.	<p>Application of computers in Pharmacy – Drug information storage and retrieval, Pharmacokinetics, Mathematical model in Drug design, Hospital and Clinical Pharmacy, Electronic Prescribing and discharge (EP) systems, barcode medicine identification and automated dispensing of drugs, mobile technology and adherence monitoring Diagnostic System, Lab-diagnostic System, Patient Monitoring System, Pharma Information System</p>