

GANPAT UNIVERSITY

Syllabus for the Ph. D. Entrance Examination

Instructions:

1. The question paper of the Ph. D. Entrance Examination shall be of 100 marks, to be attempted in 2 hours duration.
2. The question paper will have 2 sections (Section-A and Section-B).
3. Section-A (From Research Methodology) will consist of 50 objective type questions (Multiple Choice), each carrying one mark. Section A shall be common for all the candidates appear in Entrance Examination.
4. Section-B shall be of 50 marks which is Subject specific depends on respective discipline/branch) will consist two parts.
 - Part - I shall be of 25 marks having 25 objective type of questions with multiple choice answers having only one correct answer.
 - Part - II shall be of 25 marks and having descriptive type of questions.
5. There is no negative marking.

SECTION – A

(Common for all candidates)

RESEARCH METHODOLOGY

Total Marks: 50

Unit	Content	Marks
1	Basics of Research: Research: Meaning, Objective, Characteristics, Steps of research, Methods of research, Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical.	[05]
2	Research Problem and Research Design Introduction to Research Problem, Necessity of Defining the Problem, Selecting the Problem, Techniques Involved in Defining a Problem, Meaning and Types of Research Design, Important Concepts Relating to Research Design	[10]
3	Data Collection and Analysis Methods of Data Collection- Observation, Interview, Questionnaires, Schedules, Survey and Experimental. Selection of Appropriate Method for Data Collection, Different Techniques of Sampling such as Probability and Non-Probability, Basic Statistical Methods of Data Analysis such as Frequency distribution, Measures of central tendency, Measures of Dispersion, Coefficient of variation, correlation and regression.	[20]
4	Ethics in Research: Environmental impacts and Ethical issues, Commercialisation, Copy right, Royalty, Intellectual property rights and Patent law, Plagiarism, Citation, Referencing style and acknowledgement.	[05]

Reference Books

1. 'Research Methodology- A Step-By-Step Guide for Beginners', Ranjit Kumar, (Pearson Education, Delhi) ISBN: 81-317-0496-3.
2. 'Research Methodology- Methods and Techniques', Kothari, C.K., New Age International, New Delhi.
3. Research In Education, John V. Best, John V. Kahn 10th ed., Allyn & Bacon Publisher, 2005.
4. Practical Introduction of copyright by Gavin Mcfarlane, McGraw Hill Inc., USA.
5. Introduction to Scientology Ethics, Hubbard, L. Ron. New Era Publisher, Denmark.
6. Research Methodology by Deepak Chawala, Vikas Publications.
7. Statistics for Management, Levin & Rubin, Pearson Publication

SECTION – B

Faculty of Pharmacy

Unit	Content	Marks
1	Natural Products: Pharmacognosy & Phytochemistry Chemistry, tests, isolation, characterization and estimation of phytopharmaceuticals belonging to the group of Alkaloids, Glycosides, Terpenoids, Steroids, Bioflavanoids, Purines, Guggul lipids. Pharmacognosy of crude drugs that contain the above constituents. Standardization of raw materials and herbal products. WHO guidelines. Quantitative microscopy including modern techniques used for evaluation. Biotechnological principles and techniques for plant development, Tissue culture.	[8]
2	Pharmacology: General pharmacological principles including Toxicology. Drug interaction. Pharmacology of drugs acting on Central nervous system, Cardiovascular system, Autonomic nervous system, Gastro intestinal system and Respiratory system. Pharmacology of Autocoids, Hormones, Hormone antagonists, chemotherapeutic agents including anticancer drugs. Bioassays, Immuno Pharmacology. Drugs acting on the blood & blood forming organs. Drugs acting on the renal system. Drug Drug interactions and Drug food interactions, Adverse Drug reactions.	[10]
3	Medicinal Chemistry: Structure, nomenclature, classification, synthesis, SAR and metabolism of the following category of drugs, which are official in I.P and B.P. Stereochemistry of drug molecules. Hypnotics and Sedatives, Analgesics, NSAIDS, Neuroleptics, Antidepressants, Anxiolytics, Anticonvulsants, Antihistaminics, Local Anaesthetics, Cardio Vascular drugs, Antianginal agents, Vasodilators, Adrenergic & Cholinergic drugs, Cardiotonic agents, Diuretics, Antihypertensive drugs, Hypoglycemic agents, Antilipidemic agents, Coagulants, Anticoagulants, Antiplatelet agents. Chemotherapeutic agents Antibiotics, Antibacterials, Sulphadiazine. Antiprotozoal drugs, Antiviral, Antitubercular, Antimalarial, Anticancer, Antiamoebic drugs, Vitamins and Hormones.	[10]
4	Pharmaceutics: Development, manufacturing standards, Q.C. limits, labeling as per the pharmacopoeial requirements. Storage of different dosage forms. Biopharmaceutics and Pharmacokinetics and their importance in formulation and development. Formulation and evaluation of conventional and novel dosage forms like tablets, capsules, injectables, aerosols, microspheres, microemulsions, Nano formulations, gastro retentive formulations, transdermal and ophthalmic formulations. Formulation, evaluation and storage of cosmetics such as lipstick, shampoo, creams, nail preparations and dentifrices. Pharmaceutical calculations.	[10]
5	Pharmaceutical Analysis: Principles, instrumentation and applications of the following: Absorption spectroscopy (UV, visible & IR). Fluorimetry, Flame photometry, Potentiometry, Conductometry and Polarography. Pharmacopoeial assays. Principles of NMR, ESR, Mass spectroscopy. Different chromatographic methods.	[4]
6	Biochemistry: Biochemical role of hormones, Vitamins, Enzymes, Nucleic acids, Bioenergetics. General principles of immunology. Immunological. Metabolism of carbohydrate,	[3]

lipids, proteins. Methods to determine, kidney & liver function. Lipid profiles.

7 Microbiology: [3]

Principles and methods of microbiological assays of the Pharmacopoeia. Methods of preparation of official sera and vaccines. Serological and diagnostics tests. Applications of microorganisms in Bioconversions and in Pharmaceutical industry.

8 Pharmaceutical Jurisprudence: [2]

Drugs and cosmetics Act and rules with respect to manufacture, sales and storage. Pharmacy Act. Pharmaceutical ethics.

References:

1. Remington's Pharmaceutical Sciences, Mack Publishing Company, Easton, Pennsylvania. Latest edition.
2. Controlled Drug delivery, Fundamentals and Applications by J.R. Robinson & Uinvent Lee, Marcel Dekkar Inc.
3. Novel Drug Delivery Systems by Y. W. Chian Ed. James Swarbrick, Marcel Dekker.
4. Applied Biopharmaceutics and Pharmacokinetics by Leon Shargel, Susanna Wu- Pong and Andrew B. C. Yu.
5. Pharmacokinetics by Milo Gibaldi and Donald Perrier.
6. Bergeys manual of Systematic Bacteriology, Williams and Wilkins-A Waverly company.
7. Industrial Microbiology. Fourth edn, Prescott and Dunn. CBS Publishers and Distributors.
8. Trease E and Evans W.C., Pharmacognosy, Balliere Tindall. Eastbourne, U.K.
9. Paul M. Dewick, Medicinal Natural Products: A biosynthetic Approach, Willy Publishers.
10. Kokate C.K, Purohit A.P. and Gokhale S.B. Pharmacognosy (Degree), Nirali Prakashan, Pune.
11. Rang H.P., Dale M.M., et al- Rang and Dale's Pharmacology (2007) 6th Edn. Churchill livingstone Elsevier, USA.
12. Goodman and Gilman's- The Pharmacological basis of Therapeutics, 11th Edn., 2005, Mc Graw Hill Companies, Pergamon Press, Singapore.
13. Wilson and Giswolds Textbook of Organic Medicinal and Pharmaceutical Chemistry, J. Lippincott Co. Philadelphia
14. W. C. Foye, Principles of medicinal chemistry, Lea and febiger, Philadelphia.
15. Textbook of Biochemistry by Dr. Ramarao, Latest edition.
16. A. L. Lehninger, Principles of biochemistry, CBS Publishers and Distributors, Latest edition.
17. Dispensing Pharmaceutical for students by Cooper and Gunn, 12th ed. CBS Publishers & Distrubuters, New Delhi, 2000.
18. Drug and Cosmetic act and Rules by Vijay Malik
19. A text Book of Forensic Pharmacy by- B.M.Mithal
20. Organic Chemistry, Robert T. Morrison and Robert N. Boyd, 6th ed., PH I Learning Pvt. Ltd., New Delhi, 2008
21. Instrumental method of analysis by Willard Hobartb H., 7th ed., CBS Publishers & Distrubuters, New Delhi, 1986.
22. Quantitative chemical analysis by Vogel A. I., 6th ed., Pearson Education, 2000 Roger Walker and Clive Edwards, Clinical Pharmacy and Therapeutics (2008), 4th ed. reprint, Churchill Livingstone, Edinburgh.
24. Indian and British Pharmacopoeia, Latest editions.

Note: Candidates shall also refer the textbooks they have studied during their pharmacy courses in addition to above.