

Faculty of Pharmaceutical Science

Mangalayatan University, Jabalpur

Phd Entrance Examination (2024-25)

Syllabus

1. **Pharmaceutics**

- Preformulation Studies: Physical properties of drugs, solubility, stability.
- Dosage Form Design: Tablets, capsules, emulsions, suspensions, and ointments.
- Pharmaceutical Engineering: Mixing, drying, filtration, size reduction, heat transfer.
- Good Manufacturing Practices (GMP): Quality control, quality assurance.

2. **Pharmacology**

- General Pharmacology: Pharmacokinetics, pharmacodynamics, drug receptor interactions.
- Systemic Pharmacology: Drugs affecting cardiovascular, CNS, endocrine systems.
- Chemotherapy: Antibiotics, anti malarials, anti tubercular drugs.
- Toxicology: Principles of toxicology, types of toxicity, antidotes.

3. **Pharmaceutical Chemistry**

- Medicinal Chemistry: Drug design, structure activity relationship (SAR), synthesis of drugs.
- Organic Chemistry: Reactions, mechanisms, stereochemistry.
- Inorganic Chemistry: Radiopharmaceuticals, essential elements, complexes.

4. **Pharmacognosy**

- Medicinal Plants: Classification, identification, extraction, and phytoconstituents.
- Herbal Drugs: Standardization, quality control of herbal formulations.
- Phytochemistry: Alkaloids, glycosides, flavonoids, terpenoids.

5. **Pharmaceutical Analysis**

- Analytical Techniques: Chromatography (HPLC, GC), spectroscopy (UV, IR, NMR, MS).
- Quantitative Analysis: Titrations, gravimetric analysis, thermal analysis.

6. Herbal Drug Technology

- Herbal Formulations: Manufacturing, evaluation, stability of herbal products.
- Regulatory Aspects: WHO guidelines on herbal drugs, patenting.

7. Biopharmaceutics & Pharmacokinetics

- Drug Absorption, Distribution, Metabolism, and Excretion (ADME).
- Bioavailability and Bioequivalence.
- Pharmacokinetic Models.

8. Pharmacy Practice

- Hospital & Clinical Pharmacy: Drug distribution systems, adverse drug reactions (ADRs).
- Community Pharmacy: Prescription handling, patient counseling, health education.

9. Biostatistics and Research Methodology

- Statistical Tools: Probability, hypothesis testing, regression analysis.
- Research Design: Experimental, observational, clinical trials.

10. Computer Aided Drug Design (CADD)

- Molecular Modeling: Structure based drug design, ligand based design.
- QSAR Studies: Quantitative structure activity relationship, docking studies.

11. Advanced Instrumentation Techniques

- Spectroscopic Methods: NMR, MS, X ray diffraction.
- Separation Techniques: HPLC, UPLC, capillary electrophoresis.

12. Novel Drug Delivery Systems (NDDS)

- Targeted Drug Delivery: Liposomes, nanoparticles, microspheres.
- Controlled Release Systems: Osmotic pumps, transdermal patches.

13. Social and Preventive Pharmacy

- Public Health: Epidemiology, health education, prevention of diseases.
- Pharmacoeconomics: Cost effectiveness, quality of life studies.