Shahid Gangalal National Heart Centre
Bansbari, Kathmandu

Syllabus for Pharmacist

Full Marks: 100 | Pass marks: 40 | Time: 2 Hours

Objective Questions: 25 x 2 = 50
Short Questions: 3 x 10 = 30
Long Question: 1 x 20 = 20

1. Dispensing and community pharmacy **5 Marks**

- **a.** Prescription: Handling of prescription, source of errors in prescription, care required in dispensing procedures including labeling of dispensed products.
- **b.** Posology: Definition, Factors affecting dose selection. Calculation of children and infant doses
- **c.** Community Pharmacy: Definition, scope, of community pharmacy Roles and responsibilities of Community pharmacist, Pharmaceutical care, Patient counseling. Patient medication adherence, Essential Drugs concept and Rational Drug Therapy
- **d.** Inventory control in community pharmacy: Various methods of Inventory Control ABC, VED, EOQ, Lead time, safety stock
- **e.** Good Community Pharmacy Practice: Requirements of premises/layout, equipments, manpower, of material, storage and inventory control services, documentation

2. Pharmaceutical analysis and Quality assurance **5 Marks**

- **a.** Fundamental titrametric analysis: Acid-base, Oxidation-reduction, Non-aqueous, Complexometric and potentiometric titrations.
- **b.** Spectroscopic methods of analysis: UV, IR, NMR spectroscopy, Atomic absorption and Emission spectroscopy.
- **c.** Separation techniques: Column, Thin layer, Gas chromatography; High Performance Liquid Chromatography.
- **d.** GMP, GLP, ISO 9000, TQM, Quality Review and Quality Documentation
- **e.** Validation: validation of equipment, validation of analytical procedures.

Section B- 10 Marks

3. Pharmaceutics **5 Marks**

- **a.** Solid dosage forms: Tablet and Capsules. Excipients used, Formulation and evaluation.
- **b.** Liquid Dosages Forms: Introduction, types of additives used in formulations, Vehicles, stabilizers, preservatives, suspending agents, emulsifying agents, solubilizer, colors and flavours. Evaluation hof liquid dosage forms.
- **c.** Semisolid Dosage Forms: Semisolid bases and their selection. Formulation and Evaluation of semisolids.
- **d.** Bioavailaility and Bioequivalence studies.
- **e.** Stabilization and stability testing protocol for various pharmaceutical products.

4. Microbiology **5 Marks**

- **a.** Sterilization, different methods, validation of sterilization methods &equipments. Sterility testing of all pharmaceutical products.
- **b.** Immunity, primary and secondary, defensive mechanisms of body, microbial resistance, interferon.

c. Microbial assays of antibiotics, vitamins & amino acids. Manufacture of antibiotics.

Section C- 50 Marks

5. Pharmacognosy **5 Marks**

a. Sources of drugs: Biological, marine, animal, mineral and plant tissue cultures as source of drugs

b. Secondary metabolites in Plants: Alkaloids, Glycosides, Resin, Fixed oils, Volatile Oils and Tannins. Phytochemical Screening

c. Different types of techniques for extraction of phytoconstituents from crude drugs

d. Plant based drugs in modern medicine. Digoxin, Morphine, Quinine, Atropine, Pilocarpine, Taxol, and Vinblastine

6. Pharmacology and Pharmacotherapeutics **40 Marks**

a. Pharmacotherapy of diseases associated with following systems/ diseases: Hypertension, Congestive cardiac failure, Angina Pectoris, Myocardial infarction, Arrhythmias, Hyperlipidaemias, Asthma, Chronic obstructive airways disease, Diabetes, Thyroid diseases, Ulcer, Epilepsy.

b. Chemotherapy of Cancer, Malaria, AIDS, TB and Protozoal infestation.

c. Pharmacology of immunosuppressants and stimulants

d. Principles of Toxicology : General principles of treatment of poisoning with particular reference to barbiturates, opioids, organophosphorous and heavy metal poisoning.

7. Medicinal Chemistry **5 Marks**

a. Synthetic procedures of selected drugs, mode of action, uses, structure activity relationship of the drugs belonging to following classes. Diuretics, Antihypertensive, Anticoagulant, NSAIDS, Penicillin and Antidiabetic.

Section D- 30 Marks

8. Pharmaceutical Jurisprudence **10 Marks**

a. Drug Act 2035 and the Regulations, Codes and institutions
- ❖ Drug Registration Regulation
- ❖ Drug Consultative Council and Drug Advisory Regulations
- ❖ Drug Standard Regulation
- ❖ Drug Inspection Regulation
- ❖ Drug Manufacturing Codes
- ❖ Drugs Sale and Distribution Codes

b. National Drug Policy (NDP): Implementation and Monitoring

c. WHO Ethical criteria on drug promotion

d. International standard on use of generic products & pharmaceutical excipients & packaging materials.

e. International convention & treaties related to Pharmacy:
- ❖ WHO Agreement - TRIPS
- ❖ International conference on Harmonization
- ❖ Certification Schemes

f. Account of following Acts in relation to pharmacy practice :
- ❖ Abusive Substance Control Act. & INCB conventions on Narcotic and

Psychotropic drugs.

- ❖ Industrial Enterprises Act.
- ❖ Consumer Act 2056.

9. Hospital pharmacy **10 Marks**

- **a.** Organization and Structure: Organization of a hospital and hospital pharmacy, Responsibilities of a hospital pharmacist, Pharmacy and therapeutic committee, Budget preparation and Implementation.
- **b.** Logistics management: Procurement & warehousing of drugs and Pharmaceuticals
- **c.** Drug Financing Schemes (cost recovery, sharing and insurance).
- **d.** Concept of Essential Drugs, National Formulary, Hospital Formulary and Drug & Therapeutics Committee.
- **e.** Standard Treatment Schedules and rational use of drugs
- **f.** Drug distribution Systems in Hospitals: Individual prescription method, Floor stock method, Unit dose drug distribution method. Central Sterile Supply Unit. Distribution of Narcotic and other controlled substances
- **g.** Total parenteral nutrition

10. Clinical Pharmacy **10 Marks**

- **a.** List and explain the activities of clinical pharmacist: drug therapy monitoring (medication chart review, clinical review, TDM, pharmacist interventions), ward round participation, ADR management, drug information and poison information, medication history interview, patient counselling and assessment of compliance.
- **b.** Interpret and discuss the clinical significance of some clinical laboratory tests: haemogram, liver function tests, pulmonary function tests and renal function tests.
- **c.** Explain the general prescribing guidelines for paediatric patients, geriatric patients, pregnant and breast feeding women.
- **d.** Explain the adverse drug reactions with special emphasis on epidemiology, classification, risk factors, monitoring and detecting ADR.
- **e.** Drug interactions: Define drug-drug and drug-food interactions. Classify and explain mechanism of drug-drug interactions.
- **f.** Describe the investigational drugs and phases of clinical trials, pharmacist's role in clinical trials, statistical methods of interpretation, legal and ethical considerations.
- **g.** Therapeutic drug monitoring (TDM): Give brief account of TDM, necessity of TDM, criteria for valid TDM.
- **h.** Hospital committees: Role of Pharmacists in different hospital committee and rational use of drugs
    - ❖ Drug and Therapeutic committee: Goals and Objectives, functions, role of DTC in drug management Cycle, Structure and organization of DTC
    - ❖ Infection control committee
    - ❖ Antibiotic monitoring committee
    - ❖ Research and Ethics committee.