

ANNEXURE - I
ER-2020 (AS PER PHARMACY COUNCIL OF INDIA)
PHARMACY

SECTION IV
PHARMACOLOGY

HUMAN ANATOMY & PHYSIOLOGY

- 1. Structure of Cell:** Components and its functions
- 2. Tissues of the human body:** Epithelial, Connective, Muscular and Nervous tissues – their sub-types and characteristics.
- 3. Haemopoietic system**
 - Composition and functions of blood
 - Process of Hemopoiesis
 - Characteristics and functions of RBCs, WBCs, and platelets
 - Mechanism of Blood Clotting
 - Importance of Blood groups
- 4. Lymphatic system**
 - Lymph and lymphatic system, composition, function and its formation.
Structure and functions of spleen and lymph node
- 5. Cardiovascular system**
 - 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
- 6. Respiratory system**
 - Anatomy of respiratory organs and their functions.
 - Regulation, and Mechanism of respiration.
Respiratory volumes and capacities – definitions
- 7. Digestive system**
 - Anatomy and Physiology of the GIT
 - Anatomy and functions of accessory glands
 - Physiology of digestion and absorption
- 8. Nervous system**
 - 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)

9. Urinary system

- Anatomy and physiology of urinary system
- Physiology of urine formation
- Renin - angiotensin system
- Clearance tests and micturition

10. Endocrine system (Hormones and their functions)

- Pituitary gland
- Adrenal gland
- Thyroid and parathyroid gland Pancreas and gonads

PHARMACOLOGY

1. General Pharmacology

- Introduction and scope of Pharmacology
 - Various routes of drug administration - advantages and disadvantages
 - Drug absorption - definition, types, factors affecting drug absorption
 - Bioavailability and the factors affecting bioavailability
 - Drug distribution - definition, factors affecting drug distribution
 - Biotransformation of drugs - Definition, types of biotransformation reactions, factors influencing drug metabolisms
 - Excretion of drugs - Definition, routes of drug excretion
- General mechanisms of drug action and factors modifying drug action

2. Drugs Acting on the Peripheral Nervous System

- Steps involved in neurohumoral transmission
- Definition, classification, pharmacological actions, dose, indications, and contraindications of
 - a) Cholinergic drugs
 - b) Anti-Cholinergic drugs
 - c) Adrenergic drugs
 - d) Anti-adrenergic drugs
 - e) Neuromuscular blocking agents
 - f) Drugs used in Myasthenia gravis
 - g) Local anaesthetic agents
 - h) Non-Steroidal Anti-Inflammatory drugs (NSAIDs)

3. **Drugs Acting on the Central Nervous System**

Definition, classification, pharmacological actions, dose, indications, and contraindications of

- General anaesthetics
- Hypnotics and sedatives
- Anti-Convulsant drugs
- Anti-anxiety drugs
- Anti-depressant drugs
- Anti-psychotics
- Nootropic agents
- Centrally acting muscle relaxants
- Opioid analgesics

4. **Drugs Acting on the Cardiovascular System** Definition, classification, pharmacological actions, dose, indications, and contraindications of

- Anti-hypertensive drugs
- Anti-anginal drugs
- Anti-arrhythmic drugs
- Drugs used in atherosclerosis and
- Congestive heart failure
- Drug therapy for shock

5. **Drugs Acting on Blood and Blood Forming Organs** Definition, classification, pharmacological actions, dose, indications, and contraindications of

- Hematinic agents
- Anti-coagulants
- Anti-platelet agents
- Thrombolytic drugs

6. **Definition, classification, pharmacological actions, dose, indications, and contraindications of**

- Bronchodilators
- Expectorants
- Anti-tussive agents
- Mucolytic agents

7. **Drugs Acting on the Gastro Intestinal Tract**

Definition, classification, pharmacological actions, dose, indications, and contraindications of

- Anti-ulcer drugs
- Anti-emetics
- Laxatives and purgatives

- Anti-diarrheal drugs

8. Drugs Acting on the Kidney

Definition, classification, pharmacological actions, dose, indications, and contraindications of

- Diuretics
- Anti-Diuretics

9. Autocoids

- Physiological role of Histamine, 5 HT and Prostaglandins
- Classification, clinical uses, and adverse effects of antihistamines and 5 HT antagonists

10. Chemotherapeutic Agents: Introduction, basic principles of chemotherapy of infections, infestations and neoplastic diseases, Classification, dose, indication and contraindications of drugs belonging to following classes:

- Penicillins
- Cephalosporins
- Aminoglycosides
- Fluoroquinolones
- Macrolides
- Tetracyclines
- Sulphonamides
- Anti-tubercular drugs
- Anti-fungal drugs
- Anti-viral drugs
- Anti-amoebic agents
- Anthelmintics
- Anti-malarial agents
- Anti-neoplastic agents

CLINICAL PHARMACY

- 1. Clinical Pharmacy:** Definition, scope, and development - in India and other countries
Technical definitions, common terminologies used in clinical settings and their significance such as Paediatrics, Geriatric, Anti-natal Care, Post-natal Care, etc
- 2. Daily activities of clinical pharmacists:** Definition, goal, and procedure of
 - Ward round participation
 - Treatment Chart Review
 - Adverse drug reaction monitoring
 - Drug information and poisons information
 - Medication history

- Patient counselling
 - Interprofessional collaboration
3. **Pharmaceutical care:** Definition, classification of drug related problems. Principles and procedure to provide pharmaceutical care
 4. **Clinical laboratory tests used in the evaluation of disease states - significance and interpretation of test results**
 - Haematological, Liver function, Renal function, thyroid function tests
 - Tests associated with cardiac disorders
 - Fluid and electrolyte balance
 - Pulmonary Function Tests
 5. **Medication errors:** Definition, types, consequences, and strategies to minimize medication errors, LASA drugs and Tallman lettering as per ISMP
 6. **Drug Interactions:** Definition, types, clinical significance of drug interactions