

**SEMESTER – VI**  
**PHARMACEUTICAL BIOCHEMISTRY**  
**THEORY**

**Programme: B.Sc.**  
**Course Code: U20/BIC/DSE/602**  
**Course Type: DSE – 1**  
**No. of credits: 3**

**Max. Hours: 45**  
**Hours per week: 3**  
**Max. Marks: 100**

**Course Objectives:**

Our Graduate students will be able to explore the dimensions of applied Biochemistry. They will be ready for Industries like pharmaceutical R & D, Clinical Trials.

**Course Outcomes:**

- CO1:** Understand the principles of pharmacology and pharmaceutical biochemistry.
- CO2:** Analyze biochemical approach to drugs and drug mechanism.
- CO3:** Interpret and summarize benefits of drug components and adverse drug effects.
- CO4:** Create conceptual knowledge dimensions for their benefits.

**MODULE I: INTRODUCTION TO PHARMACOLOGY****(10 Hrs)**

Introduction to Pharmacology and pharmaceutical biochemistry. Blood-Buffer System. Biological Membranes and transport systems. History of Drugs, Sources and Classification of drugs

**MODULE II: PHARMACOKINETICS****(12 Hrs)**

Absorption, Bioavailability & Distribution of drugs. Routes of drug administration. Biotransformation – Metabolism of Drugs. Inhibition of Drug Metabolism. Overview of drugs as inhibitors to enzymes ACE, leukotrienes, Lipoxygenase, Cyclooxygenase, DNA Polymerase Inhibitors, HIV - Protease /Reverse Transcriptase, Integrase. Excretion & Kinetics of Elimination.

**MODULE III: PHARMACODYNAMICS****(12 Hrs)**

Principles & Mechanism of Drug action through Chemicals, Enzymes (Stimulation and Inhibition), Receptors. (Drug Receptor Interaction) Drug-dose response, combined effect of Drugs, Drug Dosage. Factors modifying Drug action. Introduction to Chemotherapy, Miscellaneous drugs & essential drugs – their therapeutic uses & biochemical/ metabolic relevance. Role of vaccines and sera in pharmaceuticals.

**MODULE IV: ADVERSE DRUG EFFECTS****(11 Hrs)**

Adverse responses – Side effects, Secondary effects, Toxic effects, Intolerance, Idiosyncrasy, and Allergy of drugs. (Mechanisms and Types of allergic reactions). Photosensitivity due to drugs. Drug Dependence – Drug abuse and addiction. Drug withdrawal reactions, Teratogenicity, Carcinogenicity, Mutagenicity. Drug induced Diseases. Overview of the list of banned drugs in India and WHO recommendations.

**Reference Books:**

1. The Pharmacology volume I and II –Goodman and Gillman.
2. Essentials of Pharmaceutical biochemistry including practical exercises (EDN 2) by HarbansLal, International Edition, 2019.
3. Biochemistry for the pharmaceutical sciences by Charles P. Woodbury, 2011.
4. Pharmacology and Pharmatherapeutics – R.S.Satoskar,S.D.Bhandhakarand.
5. Lippincotts illustrated review Pharmacology.
6. Essentials of Medical Pharmacology by K D Tripathi.
7. Clinical Chemistry by Bishop, Duben- Engelkirk&Fody.

**PHARMACEUTICAL BIOCHEMISTRY****MODEL QUESTION PAPER****THEORY**

**Course Code: U20/BIC/DSE/602**  
**Credits: 3**

**Max. Marks: 60**  
**Time: 2 Hrs**

**SECTION – A****I. Answer the following****4 x 10 = 40 M**

1. Discuss biological membrane transport systems.  
(OR)
2. Write a note on sources and classification of Drugs.
3. Discuss routes of drug administration with examples.  
(OR)
4. Explain role of drugs as enzyme inhibitors with examples.
5. Discuss factors modifying drug action.  
(OR)
6. Write a note on essential drugs and their metabolic relevance.
7. Explain adverse drug responses in brief.  
(OR)
8. Write a note on drug abuse and addiction.

**SECTION – B****II. Answer any FOUR****4 x 5 = 20 M**

9. Blood buffers
10. Drug excretion
11. Drug dosage
12. Chemotherapy
13. Drug allergy
14. Vaccine & Sera