

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Sixth Semester)

Branch – BIOCHEMISTRY

**MAJOR ELECTIVE COURSE – II PHARMACOKINETICS AND
CLINICAL TRIALS**

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 The pharmacophore of a drug refers to:
(i) The method of drug synthesis
(ii) Its chemical structure
(iii) The functional groups responsible for biological activity
(iv) Its ability to dissolve in water
- 2 Which factor most significantly affects the absorption of a drug through the gastrointestinal (GI) tract?
(i) pH of the stomach (ii) Molecular weight of the drug
(iii) Taste of the drug (iv) Drug color
- 3 What is the mechanism of action of sulphonamides?
(i) Inhibition of bacterial cell wall synthesis
(ii) Disruption of bacterial DNA replication
(iii) Inhibition of protein synthesis
(iv) Inhibition of folic acid synthesis
- 4 Lipid-soluble drugs are primarily metabolized by which process?
(i) Direct renal excretion (ii) Passive diffusion out of cells
(iii) Binding to plasma protein (iv) Biotransformation in the liver
- 5 ICMR ethical guidelines are focused on:
(i) Ethical trade practices in pharmaceuticals
(ii) Biomedical research on human participants
(iii) Marketing strategies of drugs (iv) Standardization of herbal medicines

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Narrate the role of efflux pumps in MDR mechanisms.
OR
b What is a pharmacophore? Outline its significance in drug design.
- 7 a Outline the concept of drug distribution and the role of the blood-brain barrier.
OR
b Narrate the factors affecting drug absorption.
- 8 a Describe the pharmacological actions and adverse effects of paracetamol.
OR
b Summarise the mechanism of action and therapeutic uses of cardiovascular system drugs.
- 9 a Point out the role of the cytochrome P450 enzyme system in drug metabolism.
OR
b State factors influencing drug metabolism, and how do they impact drug effectiveness?

Cont...

- 10 a Summarise the role of WHO guidelines in the standardization of herbal drugs.
OR
b What is therapeutic drug monitoring? Outline its importance in personalized medicine.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss the different types of drug nomenclature with suitable examples.
OR
b Enumerate the concept of drug-receptor interactions and the role of affinity and efficacy.
- 12 a Summarize the pharmacokinetic phase of drug absorption, including the factors affecting absorption through the skin, lung, and GI tract.
OR
b Examine the major and minor routes of drug excretion and provide examples of drugs eliminated through each route.
- 13 a Brief on the structure, mechanism of action, and therapeutic uses of isoniazid in tuberculosis treatment.
OR
b Discover the mode of action of beta-lactam antibiotics and their role in bacterial infections.
- 14 a Differentiate between Phase I and Phase II drug metabolism with examples.
OR
b Compare and contrast microsomal and non-microsomal enzyme systems in drug metabolism.
- 15 a Highlight the ethical considerations outlined by ICMR for biomedical research on human participants.
OR
b Point out the regulations for the use of animals in scientific research as per CCSEA guidelines.

Z-Z-Z

END