Total No. of Questions: 22

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Pharmacy

End Semester Examination May 2025

PY3CO26 Biopharmaceutics & Pharmacokinetics

Programme	:	B. Pharm.	**Branch/Specialisation**	:	-
Duration	:	3 hours	**Maximum Marks**	:	75

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

Q1. State any two extravascular routes of drug absorption. **Marks: 2 CO: 1 BL: 1**

Rubric	Marks
W Any two extravascular routes of drug absorption.	2

Q2. Define permeability. **Marks: 2 CO: 1 BL: 1**

Rubric	Marks
Definition of permeability.	2

Q3. Enlist any four drug metabolism pathways. **Marks: 2 CO: 1 BL: 1**

Rubric	Marks
Name of any four drug metabolism pathways	2

Q4. Define bioavailability. **Marks: 2 CO: 1 BL: 1**

Rubric	Marks
Definition of bioavailability.	2

Q5. What do you mean by compartmental modelling? **Marks: 2 CO: 3 BL: 1**

Rubric	Marks
Definition of compartmental modeling	2

Q6. Give the mathematical expression for half-life of first order reaction. **Marks: 2 CO: 3 BL: 1**

Rubric	Marks
Formula for half life of first order reaction along with symbolic meaning.	2

Q7. Define steady state drug level. **Marks: 2 CO: 4 BL: 1**

Rubric	Marks
Definition of steady state drug level.	2

Q8. State the formula for loading dose. **Marks: 2 CO: 4 BL: 1**

Rubric	Marks
Formula for loading dose.	2

Q9. List any two factors causing non-linearity in pharmacokinetics. **2 4 1**

Rubric	Marks
Two factors causing non-linearity in pharmacokinetics.	2

Q10. What is Km in Michaelis Menten equation? **2 1 1**

Rubric	Marks
Definition of Km value	2

Section 2 (Answer any 2 question(s))

Marks CO BL

Q11. Discuss drug absorption along with all the factors affecting drug absorption through gastro-intestinal tract. **10 1 2**

Rubric	Marks
Definition of drug absorption	2
Factors affecting drug absorption	8

Q12. Describe the concept of bioavailabilty and methods to enhance dissolution rate of poorly soluble drugs. **10 2 2**

Rubric	Marks
Definition of bioavailability	2
Methods to enhance dissolution rate of poorly soluble drugs	8

Q13. (a) Explain the kinetics of drug-protein binding.
(b) Describe different in-vitro dissolution models. **10 3 2**

Rubric	Marks
Explanation of kinetics of drug-protein binding.	5
Explanation of all the different in vitro dissolution methods.	5

Section 3 (Answer any 2 question(s))

Marks CO BL

Q14. Differentiate in five points between compartmental, non-compartmental and physiological modeling. **5 3 2**

Rubric	Marks
Five differences between ompartmental, non-compartmental and physiological modeling	5

Q15. Illustrate five different pharmacokinetic parameters along with their mathematical expressions. **5 3 4**

Rubric	Marks
Five different pharmacokinetic parameters along with their mathematical expressions - 1 Mark each	5

Q16. Derive pharmacokinetic parameters for one compartment open model for IV infusion. **5 3 3**

Rubric	Marks
Derivation of pharmacokinetic parameters for one compartment open model for IV infusion.	5

Section 4 (Answer any 2 question(s))

Marks CO BL

Q17. Explain in detail kinetics of multiple dosing. **5 4 2**

Rubric	Marks
Explanation of kinetics of multiple dosing.	5

Q18. Discuss steady state plasma concentration with graphical representation. **5 4 2**

Rubric	Marks
Discussion of steady state plasma concentration.	3
Graph of steady state plasma concentration.	2

Q19. Describe the clinical significance of loading and maintenance dose along with their mathematical expressions. **5 4 2**

Rubric	Marks
Clinical significance of loading and maintenance dose	3
Mathematical expressions of loading and maintenance dose	2

Section 5 (Answer all question(s))

Marks CO BL

Q20. Explain different factors responsible for non-linearity in pharmacokinetics. **5 4 2**

Rubric	Marks
Explanation of different factors responsible for non-linearity in pharmacokinetics- 1 Mark each	5

Q21. Interpret various pharmacokinetic parameters using Michaelis Menten equation with suitable example. **5 4 4**

Rubric	Marks
Interpretation of various pharmacokinetic parameters using Michaelis Menten equation with suitable example.	5

Q22. Write a short note on non-linear pharmacokinetics. **5 4 2**

Rubric	Marks
Explanation of non linear pharmacokinetics.	5

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