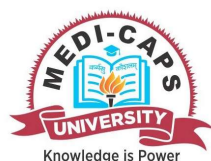


Enrollment No.....



Faculty of Pharmacy

End Sem (Even) Examination May-2022

PY3CO26 Biopharmaceutics & Pharmacokinetics

Programme: B. Pharma

Branch/Specialisation: Pharmacy

Duration: 3 Hrs.**Maximum Marks: 75**

Note: All questions are compulsory. Internal choices, if any, are indicated.

- Q.1
- Enlist mechanisms for absorption of the drug from GIT. 2
 - Explain the term 'apparent volume of distribution'. 2
 - Differentiate Phase -I with Phase -II metabolic reactions pathway. 2
 - Briefly describe levels of in-vitro in-vivo correlations (IVIVC). 2
 - Briefly describe the physiological model. 2
 - Define terms: Duration of Action and Therapeutic window. 2
 - Differentiate the catenary model with the mammillary model. 2
 - Define Loading dose and Maintenance dose. 2
 - Discuss the importance of V_{max} in Michaelis-menton equation. 2
 - Discuss the importance of K_m in Michaelis-menton equation. 2

- Q.2 Attempt any two:
- Enlist factors affecting drug absorption and describe physiological and pharmaceutical factors in detail. 10
 - Define Bioavailability and Bioequivalence. Describe a study design with protocol for conduct of BA-BE study. 10
 - (a) Describe plasma protein binding and discuss its impact. 5
(b) Write a brief note on various pathways for renal clearance. 5

- Q.3 Attempt any seven: Two questions from each section is compulsory.

Section – A

- Describe the non-compartment model and the concept of Mean Residence Time (MRT). 5
- Discuss steady-state concentration and its relation with infusion rate. Give impact of simultaneous injection with an infusion. 5

P.T.O.

- Explain any one method to determine the absorption rate constant for drugs following one-compartment model. 5

Section – B

- Write a note on the pharmacokinetics for intravenous injection of drug following two-compartment model. 5
- Discuss the effect of 'Dose-size' and 'Dose frequency' for multiple dosage regimen. 5
- Discuss factors affecting the pharmacokinetics of a drug. 5

Section - C

- How will you detect non-linearity in pharmacokinetics? 5
- Describe factors causing non-linearity in pharmacokinetics. 5
- Describe any two methods to determine V_{max} and K_m . 5

Marking Scheme
PY3CO26 Biopharmaceutics & Pharmacokinetics

Q.1	i.	Mechanisms for absorption of the drug	2 marks	2
	ii.	Apparent volume of distribution	2 marks	2
	iii.	Phase -I with Phase -II	2 marks	2
	iv.	Levels of in-vitro in-vivo correlations	2 marks	2
	v.	Physiological model	2 marks	2
	vi.	Duration of Action and Therapeutic window	2 marks	2
	vii.	Catenary model with the mammillary model	2 marks	2
	viii.	Loading dose and Maintenance dose	2 marks	2
	ix.	Importance of V_{max} in Michaelis-menton equation	2 marks	2
	x.	Importance of K_m in Michaelis-menton equation	2 marks	2
Q.2		Attempt any two:		
	i.	Factors affecting drug absorption	2 marks	10
		Physiological factors	4 marks	
		Pharmaceutical factors	4 marks	
	ii.	Bioavailability	2 marks	10
		Bioequivalence	2 marks	
		Study design (3 marks * 2)	6 marks	
	iii.	(a) Definition, kinetics equation	3 marks	5
		Applications of PPB shudies on ADME	2 marks	
		(b) Various pathways for renal clearance. As per explanation		
Q.3		Attempt any seven: Two questions from each section is compulsory.		
		Section – A		
	i.	Non-compartment model	3 marks	5
		Mean Residence Time (MRT), Graph	2 marks	
	ii.	Steady-state concentration and its relation	2 marks	5
		Simultaneous injection with an infusion	3 marks	

P.T.O.

iii.	Any one method	3 marks	5
	Graphical method	2 marks	

Section – B

iv.	Injection two-compartment model	3 marks	5
	Graphical methods	2 marks	
v.	‘Dose-size’	2.5 marks	5
	‘Dose frequency’	2.5 marks	
vi.	Factors affecting ADME	5 marks	5
	As per explanation		

Section - C

vii.	Detection of Non-linearity in pharmacokinetics		5
	As per explanation		
viii.	Factors causing non-linearity in pharmacokinetics.		5
	As per explanation		
ix.	Any two methods to determine V_{max} and K_m .		5
	(2.5 marks * 2)		
