Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Ph. - SEMESTER–VI • EXAMINATION – WINTER -2022

Subject Code: BP604TT **Date: 10/01/2023**

Subject Name: Biopharmaceutics and Pharmacokinetics

Time: 02:30pm to 05:30pm **Total Marks: 80**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define following terms: 1) Absorption 2) Total clearance 3) Biopharmaceutics 4) Compartment model 5) Bioequivalence 6) Therapeutic index	**06**
	(b)	Enlist different types of Passive transport mechanisms. Write characteristics of passive diffusion.	**05**
	(c)	Discuss patient related factors that influence GI absorption of drug.	**05**
Q.2	**(a)**	How does route of administration and type of dosage form influence rate of drug absorption?	**06**
	(b)	Define drug distribution. Write a short note on volume of distribution.	**05**
	(c)	Explain effect of Particle size, Polymorphism and lipophilicity of drug on GI absorption.	**05**
Q.3	**(a)**	Discuss active transport mechanism in drug absorption.	**06**
	(b)	Write a note on pH Partition theory with its limitation.	**05**
	(c)	Compare protein drug binding and tissue drug binding.	**05**
Q.4	**(a)**	Write significance of drug dissolution in bioavailability. Write use of different dissolution apparatus with respect to dosage forms.	**06**
	(b)	What do you mean by nonlinear pharmacokinetics? Discuss factors causing nonlinearity.	**05**
	(c)	Define absolute and relative bioavailability. Discuss methods of measurement of bioavailability.	**05**
Q.5	**(a)**	What are pharmacokinetic models? What are applications of such models? Discuss any one pharmacokinetic model.	**06**
	(b)	Derive equation in determination of absorption rate constant (Ka) using Wegner Nelson Method.	**05**
	(c)	What criteria must be considered in calculation of pharmacokinetic parameters from urinary excretion data?	**05**
Q. 6	**(a)**	Define pharmacokinetics. Draw a well labeled diagram of plasma drug concentration versus time plot and explain pharmacokinetic parameters.	**06**
	(b)	Define bioequivalence. Explain Latin crossover design in BE studies.	**05**
	(c)	What are loading and maintenance dose? How are they calculated?	**05**
Q.7	**(a)**	Discuss clinical effect of protein/Tissue drug binding on absorption, distribution and elimination of drug.	**06**
	(b)	Write on methods to enhance dissolution rate of poorly soluble drugs.	**05**
	(c)	Explain dosage adjustment in patients with hepatic failure.	**05**

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