Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm - SEMESTER–VI • EXAMINATION – WINTER -2020

Subject Code: BP604TT **Date: 11/01/2021**

Subject Name: Biopharmaceutics And Pharmacokinetics

Time: 2:00 PM TO 4:00 PM **Total Marks: 54**

Instructions:

1. **Attempt any THREE questions from Q-1 to Q-6.**
2. **Q.7 is compulsory to attempt.**
3. **Make suitable assumptions wherever necessary.**
4. **Figures to the right indicate full marks.**

Q.1		**Answer the following questions. (1 mark each)**	**16**
	I)	Discuss the mechanism of intracellular transport.	
	II)	Differentiate pinocytosis and phagocytosis.	
	III)	Define apparent volume of distribution.	
	IV)	What do you mean by renal clearance?	
	V)	How many types of compartment models are there? Name them.	
	VI)	Draw a schematic diagram of three compartment open model, extra-vascular administration.	
	VII)	What is the meaning of the term open in a compartment model?	
	VIII)	What is a flip-flop phenomenon?	
	IX)	Define extraction ratio.	
	X)	If steady-state plasma concentration is not directly proportional to dose then it detects non-linearity in pharmacokinetics. State whether the statement is true or false.	
	XI)	What is pharmaceutical equivalence?	
	XII)	How is dissolution of a drug different from its solubility parameter?	
	XIII)	Explain IVIVC	
	XIV)	What is the difference between relative and absolute bioavailability?	
	XV)	How AUC is calculated by trapezoidal rule?	
	XVI)	Which law governs the passive diffusion process of absorption?	
Q.2	**(a)**	Write short note on carrier mediated transport mechanism of drug absorption	**06**
	(b)	Discuss physicochemical factors of drug substance affecting its GI absorption.	**05**
	(c)	Explain physiological barriers to drug distribution in body.	**05**
Q.3	**(a)**	Explain the processes involved in the urinary excretion of drug with a schematic diagram.	**06**
	(b)	Explain plasma-level time curve along with its pharmacokinetic parameters.	**05**
	(c)	Explain the concept of loading dose and maintenance dose.	**05**
Q.4	**(a)**	Enlist methods to determine the Ke value from urinary excretion data and discuss any one in detail.	**06**
	(b)	Discuss applications of pharmacokinetic models.	**05**
	(c)	Write a note on PBPK models.	**05**
Q.5	**(a)**	Discuss Michaelis-Menten Equation.	**06**
	(b)	What are the assumptions made from multi-compartment model?	**05**
	(c)	List out the causes of non-linearity in pharmacokinetics and discuss any one cause in detail.	**05**

Q. 6	**(a)**	Enumerate different methods to improve the dissolution rate of poorly soluble drug. Discuss any one in detail.	**06**
	(b)	Describe different dissolution apparatus according to USP	**05**
	(c)	Explain Latin Square Design for bioequivalence study.	**05**
Q.7	**(a)**	Discuss Wagner-Nelson method for estimation of Ka.	**06**
		OR	
	(a)	Differentiate between plasma-protein drug binding and tissue-drug binding	**06**
		OR	
	(a)	Enlist different non-renal routes of drug excretion with example of drug excreted through each route.	**06**

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