

GUJARAT TECHNOLOGICAL UNIVERSITY
B.PHARM – SEMESTER-6 EXAMINATION – WINTER -2024

Subject Code:BP604TT**Date: 27-11-2024****Subject Name: Biopharmaceutics and Pharmacokinetics****Time:02.30 PM TO 05.30 PM****Total Marks: 80****Instructions:**

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

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| Q.1 | (a) | Define given terms 1) Biopharmaceutics 2) Absorption 3) Bioavailability 4) Total clearance 5) Bioequivalence 6) Volume of distribution. | 06 |
| | (b) | Explain barriers to drug distribution. | 05 |
| | (c) | Enlist the various mechanism of drug transport. Differentiate active and passive transport. | 05 |
| Q.2 | (a) | Explain physicochemical factor affecting on drug absorption through oral route. | 06 |
| | (b) | Write a note on kinetics of protein drug binding. | 05 |
| | (c) | Discuss non-renal routes of drug excretion. | 05 |
| Q.3 | (a) | Define metabolism and briefly explain phase I reaction. | 06 |
| | (b) | Discuss Latin square cross over design in detail. | 05 |
| | (c) | Explain various methods used for enhancement of bioavailability of poorly soluble drug. | 05 |
| Q.4 | (a) | Give a brief note on USP I, II, and III apparatus used for dissolution with figure. | 06 |
| | (b) | Describe the methods of residuals for one compartment kinetics. | 05 |
| | (c) | Write a short note on IVIVC. | 05 |
| Q.5 | (a) | What are pharmacokinetic models? Explain compartment model with their application in detail. | 06 |
| | (b) | Derive equation in determination of K_a using Wagner Nelson method. | 05 |
| | (c) | Explain the concept of loading and maintenance dose. | 05 |
| Q. 6 | (a) | Draw a well labeled diagram of plasma drug concentration versus time plot and explain all pharmacokinetic parameters. | 06 |
| | (b) | Explain sigma minus method to calculate K_e for a drug given by IV bolus for one compartment kinetics. | 05 |
| | (c) | Discuss Michaelis-Menten equation for nonlinear pharmacokinetic | 05 |
| Q.7 | (a) | What is nonlinear pharmacokinetics? Discuss the factor causing of nonlinearity in detail. | 06 |
| | (b) | Discuss on two compartment open model for intravenous bolus administration. | 05 |
| | (c) | Write a difference between plasma-protein drug binding and tissue-drug binding. | 05 |
