BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.PHARM. **SEMESTER : II**
BRANCH: PHARMACEUTICS **SESSION : SP/18**

SUBJECT: MPH2003 ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS
TIME: 3 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Discuss the various methods for determining "*in-vivo* disintegration".	[6]
Q.1(b)	Highlighting the objective, write a detailed note on IVIVC.	[6]
Q.2(a)	Write a note on "Theories of drug dissolution"	[5]
Q.2(b)	Discuss in detail, the factors enhancing drug dissolution.	[7]
Q.3(a)	Enlist the objective of bioavailability studies.	[3]
Q.3(b)	Discuss the various factors affecting absorption of drug from gastro-intestinal tract.	[9]
Q.4(a)	Define (i) chemical equivalence, (ii) pharmaceutical equivalence, (iii) therapeutic equivalence and (iv) bioequivalence	[6]
Q.4(b)	Explain different methods for assessing bioavailability.	[6]
Q.5(a)	Write short notes on (i) Flip-flop phenomena, (ii) Method of residuals	[6]
Q.5(b)	The equation that best fits the pharmacokinetics of paracetamol after oral administration of 650 mg dose is $C=3.87 (e^{-0.32t}-e^{-1.1t})$. Assuming one compartment kinetics calculate: (i) Peak time (ii) Peak plasma concentration (iii) Elimination half-life (iv) Apparent 'Vd' if F= 0.5	[6]
Q.6(a)	Derive an equation for multiple dosing when drug is given IV bolus after constant intervals conferring one compartment model. How loading dose is calculated to achieve desired steady state concentration instantaneously when drug has to be given IV bolus.	[6]
Q.6(b)	Tetracycline was administered to a patient at dosing rates of 150 and 500 mg/day, respectively. The Css were 8.9 and 25.4 mg/L, respectively. Find Km and Vmax of this patient using graphical method. What dose is needed to achieve Css of 18.7 mg/L	[6]
Q.7(a)	Write short notes on (i) pharmacokinetics of drug interaction and (ii) pharmacokinetics of extended release dosage form.	[6]
Q.7(b)	Using hypothetical beaker experiment, justify that apparent volume of distribution does not represent the physical size of the tissues.	[6]

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