

Roll No .....

MPY - 201 (PCS)

M.Pharmacy II Semester

Examination, December 2015

Biopharmaceutics and Pharmacokinetics

(Advanced Pharmaceutics - I)

Time : Three Hours

Maximum Marks: 70

Note: Attempt any five questions. All questions carry equal marks.

1. a) Discuss the compartment model for a drug showing rapid distribution after IV bolus administration. How this model is useful in determination of various pharmacokinetic parameters? 7

   b) A subject received an i.v. dose of 100 mg of a drug and plasma concentration of drug were as follows: 7

Time (hr)	1	2	3	4	5	6	7
Plasma Conc. (µg/ml)	60.65	36.79	22.31	13.53	8.21	4.98	3.02

   Assume that the drug is eliminated by an apparent first order process and $C_0 = 100\mu g/ml$ Calculate, Overall elimination rate constant(K_E), Volume of distribution V_d and Elimination half-life $t_{1/2}$.

2. a) Describe Wagner-Nelson method for determination of absorption rate constant. 7

   b) Discuss Sigma-Minus method for determination of elimination rate constant. 7

3. a) What is linear pharmacokinetics? How it is recognised? Give the reasons for nonlinear pharmacokinetics. 7

   b) What is Michaelis-Menten kinetics? Discuss the methods for determination of Km and Vm. 7

4. a) Discuss the concept of Steady-state plasma concentration. How it is dependent on elimination half-life of a drug? 7

   b) Discuss First order absorption kinetics in multiple dosing. 7

5. a) Discuss Physiological pharmacokinetic model. Give it's application and limitations. 7

   b) Discuss concept of Statistical moment theory. MRT and MDT. 7

6. a) Define bioavailability and bioequivalence. Discuss various study designs involved in determination of bioequivalence. 7

   b) Give detail account on in-vitro dissolution and in-vivo bioavailability correlation. 7

7. Write short notes on any two of the following 14

   a) Factors affecting plasma concentration and toxicity

   b) Loading dose and maintenance dose

   c) Therapeutic index and Therapeutic window.

   d) Interrelationship between pharmacokinetic parameters and physiological variables

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