Date 20/11/2010 time 2.30 to 4.30 pm

Final year B. pharm sem VII (Rev) Examination october 2010

~~pharmaceutical Biotechnology~~ Biopharmaceutics and pharmacokinetics

P4–Con No–1

Con. 5434–10. **(REVISED COURSE)** **DK–5547**

(2 Hours) **[Total Marks : 40**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** of the remaining **six** questions.

Q1. Comment briefly on the following: (8)

i. Penicillin's ability to cross BBB in healthy people and in patients with meningitis is not the same
ii. Particle size reduction does not always result in enhanced dissolution rate.
iii. Nitroglycerin is given via the sub-lingual route rather than orally.
iv. Increase in the dose may not always result in proportional increase in plasma concentration.

Q2. a. List four physiological factors that affect drug absorption. Explain the role of any two of them briefly. (6)
Q2. b. Why do proteins/peptides have bioavailability problems? (2)

Q3. a. Explain the effect of crystal polymorphism, binders and hydrates/solvates on drug absorption. (6)
Q3. b. List the plasma components that play a role in protein binding? (2)

Q4. Write short notes on any two of the following: (8)

i. Determination of relative bioavailability
ii. Barriers to drug distribution
iii. Urine analysis by sigma minus method (A.R.E. method)

Q5. An intravenous bolus dose (5 mg) of a drug following one compartment kinetics has a volume of distribution of 270 L and a half life of 6 hours. Calculate, (8)

a. The concentration after 9 hrs of drug administration
b. The elimination rate constant, volume of distribution and clearance
c. The AUC (zero to infinity) of the drug
d. The amount eliminated from the body after 3 hrs
e. The percent dose remaining after 15 hours
f. Time required to eliminate 75% of the dose.

Q6. a. Draw the typical plasma concentration vs time profile obtained after an oral dose and explain the different features of the profile. What is the equation that describes this profile and what do the terms mean? (8)

Q7. Write short notes on any two of the following: (8)

i. Method of residuals.
ii. Theories of drug dissolution
iii. Carrier mediated transport.