UG Odd Semester (CBCS) Exam., December—2016

PHARMACEUTICAL SCIENCE

(7th Semester)

Course No. : BPH–701 (C)

(Biopharmaceutics and pharmacokinetics)

Full Marks : 75
Pass Marks : 30

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. *(a)* What is biopharmaceutics? Explain its role in the development of a stable dosage form. 1+4=5

(b) With a neat diagram, explain the structure of biological membrane. 1+4=5

(c) Briefly explain the influence of particle size on drug absorption. 5

2. *(a)* Describe the passive absorption of drugs. Explain the different factors that affect the passive absorption of drugs. 3+5=8

(b) Describe the physiological factors influencing the absorption of drugs. 7

UNIT—II

3. *(a)* What is drug distribution? What are its characteristics? Briefly explain the physicochemical factors influencing drug distribution in the body. 1+5+4=10

(b) Describe the different factors affecting protein-drug binding. 5

4. *(a)* Explain Phase–I and Phase–II metabolisms of drugs. What are the consequences of drug metabolism? 6+3=9

(b) Describe the significance of plasma drug concentration measurement. 6

UNIT—III

5. *(a)* With a suitable diagram, explain the step-by-step procedure for determination of absorption rate constant from the method of residuals. 10

(b) Explain the flip-flop phenomena. 5

6. Write short notes on the following : 5×3=15

(a) Zero-order absorption model

(b) Volume of distribution and distribution coefficient

(c) Compartmental modelling

UNIT—IV

7. *(a)* Describe the different mechanisms of renal drug excretion. 9

(b) What is clearance ratio? Explain its significance. 2+3=5

(c) The total body clearance for a drug is 20 ml/min/kg. Renal clearance accounts for 15 ml/min/kg. What is the hepatic clearance for the drug? 1

8. *(a)* Describe the different methods for determination of renal clearance. 6

(b) Explain the concept of extraction ratio. Describe the relationship between extraction ratio and bioavailability. 3+3=6

(c) Explain enterohepatic circulation. 3

UNIT—V

9. *(a)* Explain single-source and multisource drug products. What do you understand by absolute and relative bioavailabilities? 4+6=10

(b) A patient received an oral dose of 500 mg antibiotics suspension and the following data were obtained after plasma drug concentrations were determined. Calculate the AUC : 5

Time (hr)	0	1	2	3	4	6	8	12
Plasma Conc. (g/ml)	0	5·0	8·0	8·5	7·5	5·0	3·0	0·5

10. Write short notes on the following : 5×3=15

(a) Bioavailability from acute pharmacological response

(b) Study design for bioequivalence studies

(c) Waiver of bioavailability requirements

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