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PY 132701

Roll No. of candidate | | | | | | | | | | |

2019

B.Pharm. 7th Semester End-Term Examination

PHARMACEUTICS – VI

(Old Regulation)

Full Marks – 100 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *six* from the rest.

1. Answer the following (MCQ/ Fill in the blanks) : (10 × 1 = 10)

   (i) Parallel design is suitable for bioequivalence study of drugs with ———— $t_{1/2}$ (short/long).

   (ii) The time required to reach steady (when Ka > Ke) is approximately ———— half-lives.

   (iii) Conjugation of cyanide ion with thiosuiphate takes place in the presence of the enzyme

   (a) Sulfotransferase

   (b) Rhodanese

   (c) Pyrophosphorylase

   (d) UDPG-glucuronyl transferase

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(iv) Which one of the following drugs undergo binding with haemoglobin

(a) Phenytoin (b) Acetazolamide

(c) Chlorpromazine (d) Chlorthalidone

(v) For a basic drug with pKa < 5, which one of the following applies

(a) Unionized at all pH, absorbed throughout the GIT

(b) Ionized at gastric pH, better absorbed from intestine

(c) Ionized at all pH, poorly absorbed from GIT

(d) Ionized in intestinal pH, unionized in gastric pH

(vi) Scatchard plot is found in

(a) Tissue binding

(b) Kinetics of protein-drug binding

(c) Distribution of drugs

(d) None of the above

(vii) In one compartment open model elimination follows

(a) Zero order (b) First order

(c) Second order (d) Mixed order

(viii) Which one of the following falls under *Rule of five*

(a) Lipophillicity (b) Disintegration time

(c) Age (d) Drug interaction

(ix) The increasing order for dissolution of different solid forms of drugs is

(a) Stable>Metastable>Amorphous

(b) Amorphous >Stable>Metastable

(c) Amorphous>Metastable>Stable

(d) None of the above

(x) Antiport involves
(a) Movement of molecules in same direction
(b) Movement of molecules in opposite direction
(c) Movement of molecules in faster direction
(d) Movement of molecules in slower direction

2. (a) What is the need for biotransformation?
(b) What are different drug metabolizing enzymes available?
(c) Describe the Phase I and Phase II biotransformation pathways with appropriate examples. (2 + 3 + 10)

3. (a) Define bioavailability and bioequivalance.
(b) Explain the plasma level time method for assessment of bioavailability.
(c) Draw a typical Latin square design for conducting bioequivalance study. (3 + 6 + 6)

4. (a) With a neat drawing show the composition of cell membrane. Classify the drug transport processes.
(b) Differentiate – passive versus active transport mechanisms; paracellular transport versus pore transport.
(c) Discuss the possible ionization and absorption site for weakly acidic and basic drugs based on pH-partition hypothesis. (4 + 4 + 7)

5. (a) Derive equations for determination of pharmacokinetic parameters of an IV bolus administration.
(b) Explain the determination of absorption rate constant by Wagner-Nelson method.
(c) Compare the absorption characteristics of drugs absorbed by zero-order with those absorbed by first order process after extravascular administration. (7 + 4 + 4)

6. (a) What is volume of distribution.

(b) State and explain the kinetics of protein binding.

(c) Explain the physiological barriers for drug distribution. (2 + 6 + 7)

7. (a) What is clearance and total body clearance?

(b) What are the factors affecting renal clearance?

(c) To a 70 kg patient a drug was given by IV infusion. The drug has a half life of 22 hours, apparent Vd 12.7 litres and the desired steady state plasma concentration is 0.0002 μ g/ml. Assuming one compartment kinetics calculate the time required to reach 90% of Css, Infusion rate to achieve the desired Css, Loading dose to attain Css rapidly, plasma concentration of drug after 48 hours from the start of infusion. (3 + 6 + 6)

8. (a) What are the pharmacodynamic parameters those can be obtained from plasma level-time curve.

(b) Explain the theories of drug dissolution.

(c) What do you understand about nonlinear pharmacokinetics? Give derivation of an equation to estimate capacity limited processes. (3 + 6 + 6)

9. Explain any *three* of the following : (5 + 5 + 5)

(a) Flip-flop phenomenon

(b) Design of dosage regimen

(c) Pharmacokinetic drug interaction

(d) Two compartment model.
