Total No. of printed pages = 4

BP 604 T

25/08/22

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

2022

B.Pharm. 6th Semester End-Term Examination

BIOPHARMACEUTICS AND PHARMACOKINETICS

Full Marks – 75 Time – Three hours

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

1. Answer the following MCQs : (20 × 1 = 20)

(i) For determination of bioavailability by urinary excretion data method, how much amount of administered drug should be excreted unchanged in the urine?

(a) Not more than 30% (b) Not more than 50%

(c) At least 10% (d) At least 20 %

(ii) Drugs like quaternary ammonium compounds or sulphonic acid are get absorbed by

(a) Ion pair transport (b) Convective transport

(c) Active transport (d) Facilitated diffusion

(iii) A drug administered by intravenous route appeared in faeces, it implies that the drug

(a) Undergoes first pass metabolism

(b) Undergoes enterohepatic recycling

(c) Having high protein binding

(d) It is not completely metabolized

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(iv) Possibility of degree of ionization of a drug with pKa value of 3 at pH value of 7 is

(a) Approximately 50% would be ionized and 50% would be unionized

(b) Majority portion would be ionized

(c) Majority portion would be unionized

(d) None of the above

(v) Solvent molecules if entrapped in the crystalline structure, then it is called as

(a) Metastable polymorph

(b) Pseudopolymorph

(c) Liquid crystals

(d) Amorphism

(vi) Estimation of para amino hipuric acid is a measure of

(a) Effective renal blood flow

(b) Renal drug excretion rate

(c) Tubular reabsorption rate

(d) Glomerular filtration rate

(vii) The enzyme produced in the first step of the formation of glucoronide is

(a) Uridine triphosphate

(b) Uridine 5 diphosphate alpha D glucoronic acid

(c) UDP glucose

(d) Glucose 6 phosphate dehydrogenase

(viii) Low solubility and low permeability in BCS classes

(a) Class I (b) Class II

(c) Class III (d) Class IV

(ix) The mechanism of drug excretion in milk or mammary excretion

(a) Passive process (b) Active process

(c) Glomerular secretion (d) Protein binding

(x) Which kind of drugs are absorbed through endocytosis?

(a) Polar drugs

(b) Water soluble drugs

(c) Molecular weight ranging 100-400 dalton

(d) Macromolecular drugs or drugs as oily droplets

(xi) The name of the specialized cells that support the blood brain barrier tissue

(a) Fat cells (b) Dendrites

(c) Astrocytes (d) Endothelial cells

(xii) The molecular weight of drug for easy passage through the membrane is

(a) 500-600 da (b) 200-400 da

(c) 600-800 da (d) 300-500 da

(xiii) All of the following are examples of Phase 1 drug metabolizing reactions, except

(a) N-dealkylation of theophylene

(b) Aliphatic oxidation of pentobarbital

(c) Hydrolysis of succinylcholine

(d) Reductive dehalogenation of halothane

(xiv) For a normal sized adult, the hepatic clearance of a drug whose metabolism is limited by the rate of blood flow to the liver would be

(a) 60 ml/min (b) 120 ml/min

(c) 1650 ml/min (d) 1500 ml/min

(xv) To avoid bioavailability issues, the drug must have a minimum aqueous solubility of

(a) 150% (b) 10%

(c) 100% (d) 1%

(xvi) Which organ comprises the peripheral compartment in a two compartment model?

(a) Liver (b) Lungs

(c) Kidneys (d) Muscles

(xvii) Non-linear pharmacokinetics is also known as ————

(a) Dose dependent

(b) Enzyme capacity limited

(c) Saturation pharmacokinetics

(d) All of the above

(xviii) In which model compartments are joined in series?

(a) Compartment model

(b) Caternary model

(c) Physiologic model

(d) Mammillary model

(xix) The half life of a drug eliminated by first order elimination kinetics will be longer in individuals who have an:

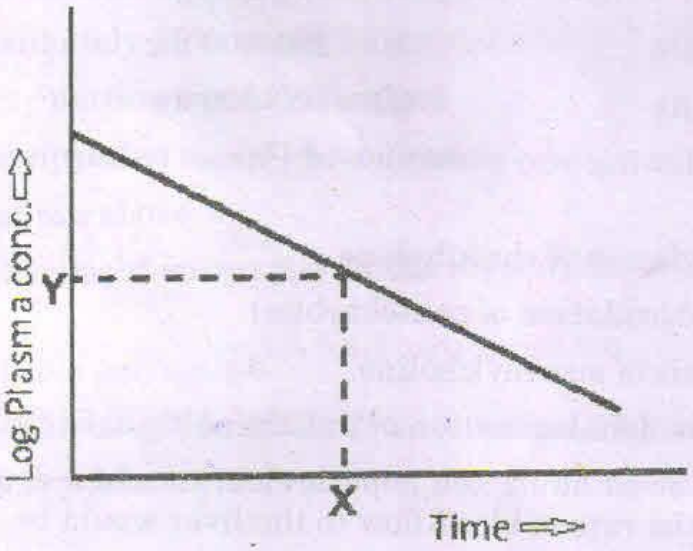
(a) Increased volume of distribution or increased clearance

(b) Increased volume of distribution or decreased clearance

(c) Decreased volume of distribution or increased clearance

(d) Decreased volume of distribution or decreased clearance

(xx) Point 'X' in the below graph represents



(a) $t_{1/2}$ (b) T_{max}

(c) T_{min} (d) Duration of action

2. Answer *any seven* of the following : (7 × 5 = 35)

(a) Write the Noyes-Whitney equation and give its significance.

(b) Discuss the drug-protein binding sites.

(c) Explain apparent volume of distribution and distribution coefficient.

(d) Explain BCS classification of drugs.

(e) Explain distribution of drugs to foetus through placental barrier.

(f) Explain the concept of total body clearance.

(g) How the dose adjustments are done in renal and hepatic failure?

(h) Differentiate between-one and two compartments.

(i) Describe about pH partition theory.

3. Answer *any two* : (2 × 10 = 20)

(a) Explain determination of pharmacokinetic parameters from plasma concentration data after administration of drugs by I.V. bolus.

(b) Explain the single dose bioavailability studies with requirements to be followed. Write about the statistical designs to be followed in these studies? (6+4)

(c) Discuss pharmacokinetic interactions affecting absorption and distribution with suitable examples.