Total No. of printed pages = 4

BP 604T

17/5/24

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

2024

B.Pharm. 6th Semester End-Term Examination

BIOPHARMACEUTICS AND PHARMACOKINETICS – THEORY

New Regulation (w.e.f 2017-18)

Full Marks – 75 Time – Three hours

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

1. Multiple Choice Questions (Answer *all* questions) : (20 × 1 = 20)

(i) What is the driving force for passive diffusion?

(a) Concentration gradient

(b) Electrochemical gradient

(c) Both (a) and (b)

(d) None of these

(ii) Under the concept of biopharmaceutics, hydrophobic drugs are

(a) Permeation rate-limited

(b) Dissolution rate limited

(c) Initially permeation then dissolution rate limited

(d) None of these

(iii) Which of the following is not an important parameter of plasma level time studies?

(a) Cmax (b) Tmax

(c) AUC (d) Steady state level

(iv) Which of the following drugs shows non-linearity in hepatic excretion?

(a) Carbamazepine (b) Propanolol

(c) Penicillin (d) Thiopental

(v) Linear pharmacokinetics is _____

(a) Dose dependent (b) Dose independent

(c) Both (a) and (b) (d) None of these

[Turn over

(vi) In Michaelis–Menten equation, when the value of Km = C

(a) Rate of process is half the maximum rate

(b) The elimination of most drugs follows first order kinetics

(c) The elimination of most drugs follows zero order kinetics

(d) The elimination of most drugs follows second order kinetics

(vii) What is the name of the drug binding site II of HAS?

(a) Tamoxifen binding site

(b) Warfarin and azapropazone binding site

(c) Diazepam binding site

(d) Digitoxin binding site

(viii) When the active transport system becomes saturated, the rate process become?

(a) Zero order

(b) Second order

(c) Pseudo first order

(d) Pseudo zero order

(ix) When the solvent molecules are entrapped in the crystalline structure of the polymorph, it is called as

(a) Pseudo–polymorphism

(b) Amorphism

(c) Crystallinity

(d) All of the above

(x) Very weak bases having pKa < 5

(a) Ionized in the entire pH range of GIT

(b) Show absorption, which is pH dependent

(c) Unionized at all pH conditions

(d) None of the above

(xi) Which of the following is the half life of zero order reaction?

(a) $t_{1/2} = A_0 / 2k$ (b) $t_{1/2} = 0.693 / 2k$

(c) $t_{1/2} = A_0 / 2$ (d) $t_{1/2} = 2k / A_0$

(xii) Drug having _____ half lives take a very short time to achieve plateau concentration

(a) Longer (b) Shorter

(c) Intermediate (d) None of the above

(xiii) The concentration of drug in plasma above which toxic effects are precipitated is known as

(a) Maximum safe concentration

(b) Minimum Safe Concentration

(c) Intensity of action

(d) Duration of action

(xiv) 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

(xv) Which of the following dissolution test apparatus USP is used for the check out the transdermal formulation during performing in–vitro dissolution testing models

(a) Apparatus I (b) Apparatus III

(c) Apparatus IV (d) Apparatus V

(xvi) When the systemic availability of a drug administered orally is determined in comparison to its intravenous administration is called as

(a) Relative bioavailability

(b) Absolute bioavailability

(c) Bioavailability

(d) Both (a) and (b)

(xvii) Which one of the following statement is correct for symport (co–transport)

(a) Involves movement of molecules in the opposite direction

(b) The drug is transported from a region of higher concentration to lower

(c) Direct ATP is required

(d) Involves movement of molecules in same direction

(xviii) When the renal clearance (ml/mm) is less than 130, which statement is true

(a) Drug filtered and reabsorbed completely

(b) Drug filtered and reabsorbed partially

(c) Drug is filtered as well as secreted actively

(d) Clearance is equal to renal plasma flow rate

(xix) Blood testis barrier is located at

(a) Sertoli – sertoli cell junction

(b) Capillary endothelium

(c) Fetal blood vessels

(d) None of the above

(xx) Which method is not related to determine Ka value

(a) Sigma–minus method

(b) Residual methods

(c) Wagner–Nelson method

(d) Loo–Reigelmen method

2. Answer any *seven* questions : (7 × 5 = 35)

(a) Explain Wagner–Nelson method for determination of Ka.

(b) Enlists in details about various physiological barriers for distribution of drugs in the body.

(c) Elaborate in details about renal excretion of drugs and concept of clearance.

(d) Discuss in brief about theories of dissolutions.

(e) Define and explain the factors influencing protein binding of drugs.

(f) Give an account for Bioequivalence study protocol.

(g) Write a note on IVIVC.

(h) Explain the various factors leading to non- lincarity.

(i) Write a note on Caternary and mammilary models.

3. Answer any *two* questions : (2 × 10 = 20)

(a) Discuss in detail about one-compartment open model for a drug administered as IV infusion. Give the schematic representation, graphs and equations for the same.

(b) Explain the Michaelies–Menten equation in determining non–linearity.

(c) Define absorption of drug. Draw a plasma concentration time profile curve following oral route. Explain in details about the transcellular mechanism of drug absorption.