BRAINWARE UNIVERSITY

Term End Examination 2023

Programme – B.Pharm-2019/B.Pharm-2020

Course Name – Biopharmaceutics and Pharmacokinetics/Biopharmaceutics and Pharmacokinetics Theory

Course Code - BP604T

(Semester VI)

Full Marks : 75 **Time : 3:0 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 20=20

1. *Choose the correct alternative from the following :*

(i) From the following option, determine the parameter that decides the suitablity of drug to prepare sustained release preparation.

a) Clearance
b) Area under the curve
c) Biological half life
d) Absorption rate constant

(ii) Predict the outcome, when an obese person is given with a lipophilic drug.

a) Drug aggregation will begin
b) He cannot absorb lipophilic drugs
c) High adipose tissue take up most of the lipophilic drug
d) A large amount of drug is needed as the person's weight is more

(iii) Identify the compounds that are excreted through the lungs.

a) Lipophilic
b) Gaseous
c) Liquid and hydrophilic
d) Solid less than 100 Dalton

(iv) Select the option which is not a cause of non-linear pharmacokinetics.

a) Saturation of plasma protein binding
b) Saturation of carrier molecules
c) Enzyme inhibition
d) Enzyme induction

(v) From the following options, select the characteristic of matrix dissolution-controlled release systems.

a) Release the drug along the entire length of GIT
b) Prolonged their residence in the GIT and release
c) Release only at a specific drug
d) Employ waxes to control the rate of dissolution

(vi) Select the equation to find out renal clearance.

a) Plasma drug concentration/rate of elimination by the kidney
b) Rate of elimination by kidney/plasma drug concentration
c) 1 / rate of elimination by the kidney
d) 1 / plasma drug concentration

(vii) Identify the major process of absorption for more than 90% of drugs from the following options.

a) Facilitated diffusion
b) Active transport
c) Endocytosis
d) Passive diffusion

(viii) A system indicating dose dependent pharmacokinetics, will follow-

a) Linear pharmacokinetics
b) Non-linear pharmacokinetics
c) Zero order
d) Pseudo first order

(ix) Double reciprocal plot of Michaelis- Menten equation is also referred as-

a) Hanes- Woolf plot
b) Lineweaver- Burke plot
c) Scatchard plot
d) Woolf Augustinsson Hofstee plot

(x) Select the best definition for "carrier".

a) Nonpolar drugs can be transported through carrier-mediated transport
b) Carrier binds reversibly and not covalently with the molecules
c) It discharges the molecules and gets destroyed itself
d) The carrier is a protein

(xi) Name the drugs that are absorbed through endocytosis.

a) Molecular weight ranging 100-400 Dalton
b) Water-soluble drugs
c) Macromolecular drugs or drugs as oily droplets
d) Polar drugs

(xii) The cell membrane is -

a) Impermeable
b) Semipermeable
c) Permeable
d) Permeable to only gases

(xiii) State the following option that has poorly developed BBB.

a) Infants
b) Adults Of age more than 20
c) Aged
d) Children at puberty

(xiv) Identify the following drug which cannot pass through the plasma membrane barrier.

a) Drug size less than 50 Dalton
b) Lipophilic drugs 50-600 Dalton
c) Polar or ionized drugs of size greater than 50 Dalton
d) Drug size more than 600 Dalton

(xv) From the following options, choose the expression for renal clearance ratio.

a) Renal clearance of creatinine / renal clearance of the drug
b) Renal clearance of drug/ renal clearance of creatinine
c) 1/renal clearance of the drug
d) 1/renal clearance of creatinine

(xvi) Name the method to determine patient's plasma volume.

a) Evans blue
b) Na+
c) D20
d) Tritiated water

(xvii) Choose the correct option of driving force for glomerular filtration.

a) Concentration gradient
b) Hydrostatic pressure of plasma
c) High amount of aqueous pores
d) Hydrostatic pressure of blood flow

(xviii) Choose the option, which is not a physicochemical factor of drug that can affect the renal excretion.

a) Molecular size
b) Disintegration rate
c) pKa of the drug
d) Lipid solubility

(xix) The i.v. bolus dosage is 500mg and the plasma drug concentration is 0.8 mg/ml. Calculate the volume of distribution.

a) 625 mg/ml
b) 625 l
c) 625 ml
d) 0.0016 mg/ml

(xx) From the following option, choose the disadvantage for the physiologic model.

a) Prediction of drug concentration in various body regions
b) Correlation of data in several animal species
c) Obtaining experimental data for each of the organs
d) The model gives an exact description of the drug concentration-time profile for any organ

Group-B

(Short Answer Type Questions) 5 x 7=35

2. Explain about the subject selection criterion in bioavailability studies. (5)
3. With a neat diagram, describe the process of facilitated diffusion. (5)
4. Describe about the biopharmacutical classification of drugs. (5)
5. Explain the limitations of pH- partition hypothesis. (5)
6. Briefly explain the various pharmaceutical factors affecting drug absorption. (5)
7. Explain the tests for non-linearity determination. (5)

OR

Illustrate and explain the plasma concentration time – plot for multiple oral administration. (5)

8. Explain the dose adjustment in renal failure. (5)

OR

Explain the significance of plasma-drug concentration measurement. (5)

Group-C

(Long Answer Type Questions) 10 x 2=20

9. Explain the kinetics of protein-drug binding. (10)
10. Determine the plasma drug concentration for continuous i.v. infusion in one compartment open model. (10)

OR

Explain the flip-flop phenomenon. (10)

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