BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Pharm-2019/B.Pharm-2020/B.Pharm-2021
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, select the theory which takes into account that a thin film is created by the solution of the solid at the solid-liquid interface.

a) Interfacial barrier model
b) Diffusion layer model
c) Penetration or surface renewal theory
d) Danckwert's model

(ii) Select the characteristics of diffusion-controlled release systems.

a) Release the drug along the entire length of GIT
b) Diffusion of the dissolved drug
c) Release only at a specific drug
d) Employ waxes to control the rate of dissolution

(iii) Which of the following is a distinguished feature of facilitated diffusion?

a) Carrier-mediated transport
b) Downhill transport
c) Energy is used
d) Inhibition by metabolic poisons

(iv) Which of the following option is also recognised as cell eating?

a) Transcytosis
b) Phagocytosis
c) Pinocytosis
d) Endocytosis

(v) Name the most important characteristic of a drug to be absorbed after oral administration.

a) Dissolved in HCL
b) Dissolved in alkaline solution
c) Can pass through the cell membrane
d) Form aggregate and settle down

(vi) State, why dopamine cannot be administered for the disease parkinsonism.

a) Don't have a medicine
b) It is not the medicine
c) Cannot cross the blood-brain barrier
d) Forms aggregate and thus cannot cross the BBB

(vii) Name the option, which need not be a parameter to be examined for urinary excretion data.

a) (dXu/dt)max
b) (tu)max
c) Xu
d) Cmax

(viii) If the rate of a process is directly proportional to its concentration, then it is identified as-

a) First order process
b) Zero order process
c) Mixed order process
d) Second order process

(ix) Name the mechanism of drug excretion for biliary excretion.

a) Active secretion
b) Passive diffusion
c) Glomerular secretion
d) Passive reabsorption

(x) According to chrono-pharmacokinetics, select the factor responsible for variation in drug distribution.

a) Protein binding
b) Extracellular fluid
c) Red blood cells
d) Tissue binding

(xi) Select the correct option which explains the principle of super position.

a) Non-linear pharmacokinetics
b) Linear pharmacokinetics
c) Bioavailability
d) Excretion

(xii) Choose the following factor that is not responsible for non-linear pharmacokinetics.

a) Michaelis- Menten constant
b) Saturation of binding
c) Saturation of enzymes
d) Solubility

(xiii) Select the following option that can be determined using Michaelis- Menten equation.

a) Absorption
b) Distribution
c) Elimination
d) Metabolism

(xiv) At a constant clearance rate, a drug with increased Vd, can be predicted to have -

a) Longer elimination half life
b) Reduced elimination half life
c) No effect on half life
d) Fluctuating half life

(xv) Predict the time required for an intravenously administered drug to finish a complete circulation in body.

a) 5-8 min
b) 7-10 min
c) 1-3 min
d) 1 min

(xvi) Name the pharmacokinetic model which is drawn on the basis of anatomic and physiologic data.

a) Compartment model
b) Caternary model
c) Physiologic model
d) Mammillary model

(xvii) Choose the pharmacodynamics method of studying bioavailability.

a) Acute pharmacologic response
b) Plasma-level time studies
c) Urinary excretion studies
d) Stool excretion studies

(xviii) Choose the disadvantage of cross over study on volunteers.

a) Minimize the intersubject variability in plasma drug levels
b) Minimize the carry-over effect
c) Minimizes variations due to time effect
d) Takes a lot of time to get the result of the study

(xix) Choose the route of administration for 100% bioavailability.

a) Oral route
b) Intravenous route
c) Transdermal route
d) Rectal route

(xx) Choose the method which is not used in determining bioavailability.

a) Plasma level- time studies
b) Urinary excretion studies
c) Acute pharmacologic response
d) Pulmonary excretion study

Group-B

(Short Answer Type Questions) 5 x 7=35

2. State the characteristics of active transport process. (5)
3. Explain in detail about the distribution of drugs to foetus through placental barrier. (5)

4. Compare linear and non-linear pharmacokinetics. (5)

5. Briefly describe about carrier mediated transport for drug absorption. (5)
6. With a neat sketch, describe about endocytosis process of drug absorption. (5)

7. Explain in detail about the physiological model of pharmacokinetic compartment modeling. (5)

OR

Explain about the steady state level for one compartment open model. (5)

8. Explain in detail about any two methods of bioavailability enhancement. (5)

OR

Explain how bioavailability is measured using urinary data. (5)

Group-C

(Long Answer Type Questions) 10 x 2=20

9. Describe Michaelis-Menten kinetics and give mathematical justification for estimating Vm and Kmax from it. (10)

10. Discuss the factors which affect the protein-drug binding in gastrointestinal environment. (10)

OR

Elaborate on the non-renal routes of drug administration and its significance. (10)

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