Question Paper

Exam Date & Time: 07-Jul-2023 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Biopharmaceutics and Pharmacokinetics (Theory) [PCE-BP604T -S1]

Marks: 75 **Duration: 180 mins.**

I Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

1) Which type of drugs are absorbed faster by passive diffusion? (1)

- acidic
- unionised
- basic
- ionised

2) Carrier mediated transport obeys following absorption kinetics. (1)

- Zero order
- Pseudo first order
- Mixed order
- First order

3) Which barrier separates the circulating blood from the brain extracellular fluid (BECF) in the central nervous system (CNS)? (1)

- Blood-Cerebrospinal fluid barrier
- Simple cell membrane barrier
- Simple capillary endothelial barrier
- Blood-brain barrier

4) Rate of dissolution of different types of tablets is as follows. (1)

- conventional > film coated > sugar coated > enteric coated
- Enteric coated > sugar coated> film coated> conventional
- Conventional > sugar coated > film coated > enteric coated
- Enteric coated > film coated > sugar coated > conventional

5) Drugs which bind selectively to extravascular tissues have (1)

- Volume of distribution is in between blood volume and total body water
- Volume of distribution < blood volume
- Volume of distribution < total body water
- Volume of distribution > total body water

6) Lidocaine has more affinity for binding to..... (1)

- Lipoproteins
- Human serum albumin
- Alpha acid glycoprotein

Tissue

7) Statistical moments theory explains mainly (1)

- Compartment model
- Physiologic model
- Noncompartmental analysis
- Mammillary model

8) What kinetics of drug release is mainly followed when it is administered as Intravenous infusion? (1)

- Zero order
- First order
- Second order
- Mixed order

9) Which pharmacokinetic model is a realistic approach? (1)

- Catenary
- Mammillary
- Physiologic
- All of the above

10) All peripheral compartments are well connected to central compartment in (1)

- Catenary model
- Mammillary model
- Physiologic model
- Noncompartmental analysis

11) In which pharmacokinetic model compartments are joined to one another in a series like the compartments of a train? (1)

- Catenary model
- Mammillary model
- Physiologic model
- Noncompartmental analysis

12) For attaining desired steady state drug levels in multiple dosing immediately, what dose is mainly given? (1)

- Loading dose
- Maintenance dose
- Total dose
- Maintenance dose and total dose

13) How much duration is required to attain steady state drug levels following multiple administrations with half-life as the dosing interval? (1)

- One half-life
- Two half-lives
- Three half-lives
- Five half-lives

14) If the dosing interval is increased and the dose is unchanged in multiple dosing, Cmax, Cmin and Cav _____ and the ratio Cmax/Cmin _____ (1)

Decrease; Increases
Increase; Decreases
Increase; Increases
Decrease; Decreases

15) At very low concentration or dose of drug, rate in the change of drug concentration in nonlinear pharmacokinetics follows (1)

Zero order kinetics
First order kinetics
Second order kinetics
None of the above

16) When active tubular secretion of the drug becomes saturated, renal clearance of the drug (1)

Increases
Decreases
Remain constant
None of the above

17) Nonlinear pharmacokinetics also called as (1)

Second order kinetics
Zero order kinetics
First order kinetics
Mixed order kinetics

18) Constancy in the rate of change of drug concentration in nonlinear pharmacokinetics is attained when (1)

Km value is very high than concentration of drug
Km value is very less than concentration of drug
Km value and concentration of drug are equal
All of the above

19) Which mechanism of drug absorption can lead to nonlinearity in the drug pharmacokinetics? (1)

Carrier mediated transport
Passive diffusion
Convective transport
All of the above

20) What happens to apparent volume of distribution when tissue binding of drug gets saturated? (1)

Increases
Decreases
Remain constant
None of the above

II Long Answers

Answer all the questions.

1) Discuss on carrier mediated drug transport mechanism. (10)

2) Explain the pharmacokinetics of drug in blood upon Intravenous Infusion administration if it follows one compartment open model (10)

III Short Answers

Answer all the questions.

1)	Explain level A and level B of IVIVC.	(5)
2)	Briefly explain the features of phase II bio-transformation reactions	(5)
3)	Discuss on active tubular secretion process in renal excretion of drugs.	(5)
4)	How the concept of method of residuals is applied in two compartment open model IV bolus administration of the drug to deduce various pharmacokinetic parameters?	(5)
5)	What are the effects of dose size and dosing interval on the pharmacokinetic profile of drug in multiple dosing by oral administration? Explain with suitable diagrams	(5)
6)	What are the causes of nonlinearity in drug absorption and drug distribution? Explain	(5)
7)	Write about the concept of Michaelis Menton equation to describe nonlinear pharmacokinetics	(5)

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