Exam Date & Time: 10-Jun-2022 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Manipal College of Pharmaceutical Sciences, Manipal
BPharm Semester VI - End Semester Examination, June 2022

Biopharmaceutics and Pharmacokinetics [PCE-BP604T]

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

Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

Multiple Choice Questions

1) This drug remain in unionized form at all pH and absorption is rapid along the entire length of GIT.

1)	Weak acid (pKa > 8)		2)	Strong base (pKa >11.0)		3)	Strong acid (pKa < 2.5)		4)	Moderately weak base (pKa 5 to 11.0)		(1)

2) Drugs extensively bound to extravascular tissues indicates___.

1) Decreases in apparent volume of distribution 2) Increase in apparent volume of distribution 3) Favours uniform distribution of drug 4) None of the above (1)

3) Reductive reactions prolong the action of drugs due to the presence of _____

1) Conjugation reaction 2) Non-microsomal enzymes 3) Reversible reactions 4) None of the above (1)

4) BCS Class II drugs will have _____

1) high solubility, high permeability 2) high solubility, low permeability 3) low solubility, low permeability 4) low solubility, high permeability (1)

5) The following statement is NOT true

1) Hydrates have less solubility than anhydrous form
2) Solvates have higher solubility than non-solvates.
3) Solid solutions shows higher dissolution
4) Amorphous form is less soluble than crystalline

(1)

6) The hepatotoxicity from paracetamol is due to the lack of _____

1) Glutathion conjugation
2) Glucuronic acid conjugation
3) Glycine conjugation
4) Glutamine conjugation

(1)

7) _____ is mainly explained by Statistical moments theory

1)	Compartment model	2)	Physiologic model	3)	Noncompartmental analysis	4)	Mammillary model

(1)

8) Intravenous infusion of drug mainly follows _____

1) Zero order infusion rate
2) First order infusion rate
3) Second order infusion rate
4) Mixed order infusion rate

(1)

9) Central compartment is well connected to all peripheral compartments in _____

1) Catenary model
2) Mammillary model
3) Physiologic model
4) Noncompartmental analysis

(1)

10) The compartments are joined to one another in a series like the compartments of a train in _____.

1) Catenary model
2) Mammillary model
3) Physiologic model
4) Noncompartmental analysis

(1)

11) Which one of the following is a realistic approach?

1) Catenary model
2) Mammillary model
3) Physiologic model
4) All of the above

(1)

12) How many half-lives required to attain steady state drug levels following multiple administrations with half-life as the dosing interval?

1) One half-life
2) Two half-lives
3) Three half-lives
4) Five half-lives

(1)

13) If the dosing interval is increased and the dose is unchanged in multiple dosing, Cmax, Cminand Cav_____ and the ratio Cmax/Cmin_____ (1)

1) Decrease; Increases 2) Increase; Decreases 3) Increase; Increases 4) Decrease; Decreases

14) _____ is useful for attaining desired steady state drug levels in multiple dosing immediately (1)

1)	Loading dose		2)	Maintenance dose		3)	Total dose		4)	None of the above	

15) Nonlinear pharmacokinetics also called as: (1)

1) Mixed order kinetics 2) Saturated kinetics 3) Capacity limited kinetics 4) All of the above

16) Rate in the change of drug concentration in nonlinear pharmacokinetics can follow _____ kinetics at very low concentration or dose of drug (1)

1) Zero order 2) First order 3) Second order 4) None of the above

17) Rate in the change of drug concentration in nonlinear pharmacokinetics attains a constant value when _____ (1)

1) Km value is very high than concentration of drug 2) Km value is very less than concentration of drug 3) Km value and concentration of drug are equal 4) All of the above

18) Renal clearance of the drug _____ when tubular reabsorption of the drug becomes capacity limited (1)

1) Increases 2) Decreases 3) Remain constant 4) None of the above

19) When plasma protein binding of drug gets saturated, its apparent volume of distribution _____ (1)

1) Increases 2) Decreases 3) Remain constant 4) None of the above

20) Following mechanism of drug absorption can lead to nonlinearity in the drug pharmacokinetics (1)

1) Passive diffusion 2) Convective transport 3) Active transport 4) All of the above

II Long Answers

Answer all the questions.

Long Answers

1) Enlist and explain various factors affecting protein-drug binding. (10)

2) Explain the pharmacokinetics of drug in blood when administered as IV bolus assuming that it follows one compartment open model. (10)

III Short Answers

Answer all the questions.

Short answers

1) Which method is commonly used to determine the bioavailability of drugs? Explain with suitable diagram and equations. (5)

2) Write the influence of drug-drug interactions on absorption and excretion of drugs with ONE example to each. (5)

3) Explain biliary excretion of drugs with suitable examples. (5)

4) Using suitable diagram, explain the application of method of residuals in two compartment open model IV bolus administration of the drug. (5)

5) Explain the effects of dose size and dosing interval on multiple dosing by oral administration of drug. (5)

6) Discuss the concept of Michaelis Menton equation to describe nonlinear pharmacokinetics. (5)

7) Explain the causes of nonlinearity in drug absorption. (5)

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