Duration: 3 Hours **Total marks: 75**

N.B.: 1. All questions are compulsory
2. Figures to the right indicate full marks.

Q. No.	Question	Marks
Q.I	**Multiple Choice Questions (Answer all)**	**20**
1.	For 'pore' transport of drugs	**1**
a)	Transport is intercellular	
b)	Driving force is hydrostatic pressure	
c)	Drug is covalently bound	
d)	A carrier is required	
2.	A basic drug with pKa 9.2 is	**1**
a)	Absorbed from the intestine	
b)	Absorbed from the stomach	
c)	Absorbed from entire length of GIT	
d)	Poorly absorbed	
3.	Reasons for decreased absorption of micronized hydrophobic drugs include all of the following, except	**1**
a)	Increased surface free energy	
b)	Formation of electrically-induced agglomerates	
c)	Adsorption of air on the surface	
d)	Decreased interfacial tension	
4.	For faster dissolution, a drug must have	**1**
a)	High diffusion coefficient and high Kw/o	
b)	Low diffusion coefficient and low Kw/o	
c)	Low diffusion coefficient and high surface area	
d)	Low surface area and low Kw/o	
5.	The barrier to transdermal absorption of drugs is	**1**
a)	Stratum granulosum	
b)	Stratum spinosum	
c)	Stratum corneum	
d)	Sweat glands	
6.	Which one of these is not a physicochemical property of drugs?	**1**
a)	Drug solubility	
b)	Disintegration time	
c)	Dissolution rate	
d)	Drug stability	

7. --------- is the ratio of the mean residence time to the absorption time **1**

a) Absorption number
b) Dissolution Number
c) Dose Number
d) Intrinsic dissolution

8. The order of dissolution of different solid forms of drugs is: **1**

a) Amorphous > Metastable >Stable
b) Amorphous > Stable > Metastable
c) Stable > amorphous > Metastable
d) Metastable > amorphous >Stable

9. Interfacial barrier model is also known as **1**

a) Limited solvation theory
b) Danckwert model
c) Noyes–Whitney Relationship
d) Hixon–Crowell Cube Root Law

10. Amorphous forms of drugs are **1**

a) Less soluble than crystal forms
b) More soluble than crystal forms
c) Also called solvates
d) Practically insoluble

11. Which of following drug shows non-linearity in hepatic excretion? **1**

a) Carbamazepine
b) Propranolol
c) Penicillin
d) Thiopental

12. Membrane permeation rate limited Physiological models are also called **1**

a) Perfusion rate limited
b) Diffusion limited
c) Dissolution rate limited
d) Catenary model

13. Non compartmental analysis model is based on **1**

a) Blood perfusion to the organ
b) Physiological organs
c) Drug diffusion to organ
d) Statistical moments theory

14. In two compartment model all transfer processes in and out of compartment are assumed to follow: **1**

a) Zero order kinetics
b) First order Kinetics
c) Second Order Kinetics
d) Mixed order kinetics

15. The rate of drug release from a matrix extended release product is given by **1**

a) Higuchi equation
b) Hixson Cube Root Law
c) Noyes Whitney equation
d) Peppas equation

16. Alcohol potentiates the action of aspirin due to **1**

a) Synergism
b) Antagonism
c) Summation
d) Enzyme induction

17. Which is not a pharmacokinetic interaction? **1**

a) Complexation
b) Enzyme induction
c) Potentiation
d) Competitive displacement

18. Following are the major mechanisms of absorption interactions, except **1**

a) Competition for active secretion
b) Adsorption
c) Malabsorption syndrome
d) Alteration in gut motility

19. A lipid bilayer structure that encloses an internal aqueous volume is **1**

a) Niosome
b) Liposome
c) Solid lipid nanoparticle
d) Nanolipid carrier

20. Following are the biopharmaceutic factors considered while designing controlled drug delivery systems, except **1**

a) Absorption mechanism
b) Partition coefficient
c) pKa
d) Dose

QII Answer any Two questions: **20**

1. How do gastric contents and gastric emptying affect drug absorption from the gastrointestinal tract? **10**

2. Explain the methods for assessing bioequivalence studies. **10**

3. After an IV bolus dose of 100mg of drug, the following plasma profile was obtained:
   $C=53.8\ e^{-0.216t}$
   Calculate the following Pharmacokinetic parameters
   a. Elimination half life and AUC **2**
   b. Volume of distribution and total systemic clearance **2**
   c. Plasma concentration at the end of 3 hours **2**
   d. Amount of drug remaining in the body after 6 hours **2**
   e. Drug eliminated from the body after 8 hours. **2**

QIII Answer any Seven questions: **35**

1. Explain facilitated diffusion and ion-pair transport as mechanisms of drug absorption. **5**
2. How does the salt form affect absorption of a drug ? **5**
3. Enlist different official methods of dissolution. Explain any one. **5**
4. Discuss the various levels of IVIVC. **5**
5. Write a note on cytochrome P450-based drug interactions. **5**
6. Explain the In-vitro and In-vivo methods used to measure permeability. **5**
7. Write a note on Generic biologics. **5**
8. Discuss the pharmacokinetic principles in the design and fabrication of controlled-release drug delivery systems. **5**
9. Write about pharmacodynamic drug interactions. **5**