T.Y.B.Pharm
Sem – VI
3/11/2025
ATKT

Time: 3 Hours **Marks: 75**

Note: All Questions are Compulsory.
Figures to the right indicate full marks.
Draw diagrams wherever required.
Use of Scientific calculator is permitted

Question no		Marks
Q.I		
1	Application of principles of pharmacokinetics to suit individual patient need is called	1
a	Population pharmacokinetics	
b	Clinical pharmacokinetics	
c	Pharmacokinetics	
d	Pharmacodynamics	
2	Select structure specific mechanism of drug absorption	1
a	Facilitated diffusion	
b	Passive diffusion	
c	Endocytosis	
d	Pinocytosis	
3	The driving force for a Passive Diffusion process is	1
a	Particle size	
b	Partition co-efficient value of the drug	
c	Thickness of the membrane	
d	Concentration gradient	
4	Micronization of drugs usually has this effect on the effective surface area.	1
a	Reduction	
b	Increase	
c	Unpredictable change	
d	No change	
5	Rapid termination of the action of thiopental is seen because	1
a	It gets redistributed to the adipose tissue	
b	It gets metabolized in the brain	
c	It binds to the blood components	
d	Brain is poorly perfused	

6 The blood brain barrier is called as tight junction due to presence of
a Astrocytes
b Carrier molecules
c Megalocytes
d Thrombocytes

7 Drug of 400 Da is excreted in
a Urine and Bile
b Urine
c Blood
d Bile

8 Following are the Phase I reactions except
a Oxidative reactions
b Reductive reaction
c Hydrolytic reaction
d Sulphation reaction

9 The bioavailability of a drug can be increased by-
a Use of amorphous form
b Use of crystalline form
c Addition of a gelling polymer
d Increase in hydrophobicity

10 When two dosage forms that have same strength are compared for their performance, the study is called as-
a Bioequivalence study
b Bioavailability study
c Bioanalytical study
d Biological study

11 If elimination follows first order kinetics, it means
a It is independent of the amount remaining in the body
b It is dependent on the amount remaining in the body
c It is dependent on distribution pattern
d It is dependent on MEC

12 How many half-lives are required to eliminate 99% of a drug?
a 5
b 10
c 7
d 9

13 Select the cause for nonlinearity in drug distribution 1

a When absorption is solubility or dissolution rate-limited

b When absorption involves carrier-mediated transport systems

c When a presystemic gut wall or hepatic metabolism attains saturation

d Saturation of binding sites on plasma proteins

14 Diffusion layer theory of drug dissolution is based on- 1

a Henderson- Hasselbach equation

b Noyce- Whitney equation

c pH- partition hypothesis

d distribution Law

15 BCS Class III drugs belong to- 1

a Low solubility, High Permeability

b High solubility, Low Permeability

c High solubility, High Permeability

d Low solubility, Low Permeability

16 If the drug dose during Multiple IV bolus dosage regimen is administered two times a day, what would be its dosing interval 1

a 12 hours

b 8 hours

c 10 hours

d 5 hrs

17 Probenecid inhibit the active tubular secretion of: 1

a Mecamylamine

b catecholamine

c Penicillin

d choline

18 In case of polymorphic drug _____ form of drug is preferred 1

a stable

b unstable

c metastable

d any form

19 Competitive displacement of bilirubin by sulphonamide causes _____ in infants 1

a vomiting

b jaundice

c kernicterus

d skin rash

20	The plasma drug concentration above _____ level causes toxic effects.	1
a	Maximum Safe Concentration	
b	Minimum Effective Concentration	
c	Intensity of Action	
d	Duration of Action	

Q.II **Attempt any 2** 2x1

1 The equation that best fits the plasma level time curve of a drug after an IV bolus dose of 200 mg is, $C = 28e^{-0.3t}$ calculate,

a. Apparent volume of distribution, half life 2
b. Total systemic clearance, AUC zero to infinity 2
c. Concentration of drug remaining after 6 hr 2
d. Percentage of drug eliminated from the body after 9 hr 2
e. What would be the new C0 achieved if the dose is changed to 500 mg 2

2 Draw a labelled diagram for plasma concentration vs time profile curve after extravascular administration of drug and explain all pharmacokinetic and pharmacodynamic parameters 10

3a Explain Significance of loading dose and maintenance dose. 5

3b Explain different phases in two compartment model. 5

Q.III **Attempt any 7** 7x

1 Explain facilitated diffusion as drug transport mechanism with diagrammatic representation and an example. 5

2 Explain effect of gastric emptying on absorption. 5

3 Enlist the dissolution apparatus as per USP. With help of a suitable diagram, explain any one official apparatus that can be used for evaluation of transdermal patch. 5

4 Discuss displacement interaction and toxicity in protein binding.

5 What are the causes of non-linearity in distribution and metabolism of drugs?

6 Enlist various factors affecting renal clearance of drug. Discuss any one in detail

7 Why is glucuronidation the commonest and most important of Phase II reactions? Justify with suitable example

8 Compare absolute and relative bioavailability. Enlist various methods of measurement of bioavailability and discuss any one.

9 Discuss the IVIVC .
