Duration: 3hrs **Marks: 75**

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

Q. 1 Choose the appropriate option for following multiple choice based questions. **20**

1 The movement of drug between one compartment and other like blood or extravascular tissue is referred to as **1**
a Drug Disposition
b Drug Distribution
c Drug binding
d Drug elimination

2 Absorption of drug through rectal route follows_____ mechanism **1**
a Endocytosis
b Facilitated diffusion
c Passive diffusion
d Pore transport

3 _____involves the engulfment of small molecules or fluid **1**
a Endocytosis
b Pinocytosis
c Phagocytosis
d Exocytosis

4 _____helps in transporting of inorganic ions across the membrane **1**
a Ion channels
b Voltage gated channels
c Aqueous filled pores
d Diffusion

5 Drugs absorbed by ion pair transport should **1**
a Ionize at all pH
b Have high partition coefficient
c Depend on water flux for absorption
d Require energy in the form of ATP

6 Apparent volume of distribution is _____ **1**
a Plasma drug concentration X amount of drug in body
b Plasma drug concentration / amount of drug in body
c Amount of drug in the body X plasma drug concentration
d Amount of drug in the body /plasma drug concentration

7	Transfer of drug from plasma to tissue depends on	**1**
a	Blood perfusion rate of tissue	
b	Weight of tissue	
c	Size of tissue	
d	Gastric emptying rate	
8	Glomerular Filtration is	**1**
a	Non selective Multidirectional process	
b	Selective Unidirectional process	
c	Non selective Unidirectional process	
d	Selective Multidirectional process	
9	Renal Clearance is expressed as	**1**
a	Rate of urinary excretion/ plasma drug concentration	
b	Elimination rate/ Plasma drug concentration	
c	Plasma drug concentration / Rate of urinary excretion	
d	Plasma drug concentration / Elimination rate	
10	_____ is Type III USP Dissolution test apparatus	**1**
a	Rotating Paddle	
b	Flow through Cell	
c	Reciprocating cylinder	
d	Paddle over disc	
11	What is the correct order of bioavailability of different dosage forms?	**1**
a	Solutions > Emulsion > Capsules > Tablet > SR Tablet	
b	Solutions > Emulsion > Tablet > Capsules > SR Tablet	
c	Emulsion > Solutions > Tablet > Capsules > SR Tablet	
d	Emulsion > Solutions > Capsules > Tablet > SR Tablet	
12	Bioavailability is	**1**
a	The rate and extent of absorption of the unchanged drug from its dosage form	
b	The time of absorption of the drug from its dosage form	
c	The time of absorption of the unchanged drug from its dosage form	
d	The rate of absorption of the drug from its dosage form	
13	Which route of drug administration shows 100% Bioavailability	**1**
a	Oral	
b	IV	
c	Rectal	
d	Topical	

14	Method of residual can be used to determine absorption rate constant when	**1**
a	Ratio of Ka to K_E is greater than or equal to three	
b	Ratio of K_E to Ka is greater than three	
c	Ratio of Ka to K_E is less than three	
d	ratio of K_E to Ka is greater than five	
15	In noncompartmental analysis, Mean residence time is equal to _____	**1**
a	The area under the zero moment's curve/area under the first moment curve	
b	The area under the first moment curve/area under the zero moment curve	
c	1 / Area under the first-moment curve	
d	1/ Area under the zero moment curve	
16	The steady state concentration following IV infusion administration determined by	**1**
a	Css = Infusion Rate - Clearance	
b	Css= Clearance / Infusion Rate	
c	Css= Infusion Rate X Clearance	
d	Css= Infusion Rate/ Clearance	
17	In multi compartment model transfer of drug from central compartment to peripheral compartment assumed to follow	**1**
a	Zero order kinetics	
b	First order Kinetics	
c	Second Order Kinetics	
d	Mixed order kinetics	
18	_____is drug accumulation in the body relative to first dose	**1**
a	Accumulation Factor	
b	Accumulation Index	
c	Apparent volume of distribution	
d	Fluctuation	
19	Capacity limited kinetics is also called as	**1**
a	Linear Pharmacokinetics	
b	Non linear pharmacokinetics	
c	Zero Order Kinetics	
d	First order Kinetics	
20	In Michaelis- Menten equation When value of Km=C	**1**
a	Rate of process is zero order	
b	Rate of process is first order	
c	Rate of Process is half the maximum rate	
d	Rate of process is double the maximum rate	

Q.II	**Attempt any 2**	**2x10**
1	An intravenous bolus dose of 125 mg of drug following one compartment kinetics give an extrapolated concentration at zero time of 25 mg/lit and elimination rate constant of 0.85 Hrs, calculate	**2**
	a) Volume of Distribution and Elimination half life	**2**
	b) Total systemic clearance and AUC zero to infinity	**2**
	c) Amount of drug eliminated from body after 6 hrs	**2**
	d) Plasma Drug Concentration after 4 hours	**2**
	e) Time required to eliminate 65% dose of drug.	
2	Elaborate on fluctuations in plasma concentration of drug after multiple IV bolus injection. Explain the equation used for calculation of maximum and minimum plasma concentration.	**10**
3	Explain any four physiological barriers to distribution of drugs.	**10**
Q.III	**Attempt any 7**	**7x5**
1	Enlist different dosage form related factors affecting absorption of drug. Explain any two.	**5**
2	Write a note on Facilitated diffusion	**5**
3	Enlist The physicochemical factors influencing the distribution of drugs. Explain any two.	**5**
4	Explain the effect of glomerular filtration on excretion of drugs.	**5**
5	Write a note on IVIVC.	**5**
6	Enlist the methods for measurement of bioavailability. Explain any one.	**5**
7	Explain determination of absorption rate constant by method of residual.	**5**
8	What are the causes of non-linearity in drug absorption and distribution?	**5**
9	Outline the factors affecting Drug Protein Binding and explain any one of them.	**5**

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