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

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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	

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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 1
determined by
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 1
peripheral compartment assumed to follow
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

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

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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