Duration: 3hrs **Total 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 use of pharmacokinetic principles in optimising the drug dosage to suit individual patient needs and achieving maximum therapeutic utility is called as _____ 1

a clinical pharmacokinetics.
b dosage regimen
c individualization
d population pharmacokinetics

2 Select a passive absorption process 1
a pore transport
b active transport
c pinocytosis
d phagocytosis

3 poorly developed BBB is observed in 1
a infants
b adults of age more than 20 years
c elderly
d children at puberty

4 Unit of perfusion rate is 1
a min/ml/ml
b ml/lit
c ml/min/ml
d mg.hr/lit

5 Carrier mediated absorption process can be described by 1
a Fick's first law of diffusion
b Michaelis-Menten equation
c Noyes Whitney's equation
d Nernst and Bruner equation

6	Probenecid act as uricosuric agent as it	1
a	inhibits glomerular filtration of uric acid	
b	competitively inhibit active secretion of uric acid	
c	has structural similarity with uric acid	
d	competitively inhibit active reabsorption of uric acid	
7	Hepatic clearance is said to be perfusion rate limited, if	1
a	it undergoes high metabolism	
b	it escapes metabolism	
c	it is metabolized to poor extent	
d	it shows intermediate metabolism rate	
8	Select the dissolution apparatus working on sink condition	1
a	paddle type	
b	basket type	
c	flow through cell	
d	paddle over disk	
9	BCS class III drugs have	1
a	high solubility, high permeability	
b	high solubility, low permeability	
c	low solubility, high permeability	
d	low solubility, low permeability	
10	_____ form of drug will be comparatively more soluble.	1
a	crystalline	
b	amorphous	
c	hydrate	
d	solvate	
11	Select the Pharmacodynamic method of studying bioavailability	1
a	acute pharmacologic response	
b	plasma-level time studies	
c	urinary excretion studies	
d	stool excretion studies	
12	What is the equation of bioavailable fraction	1
a	bioavailable dose/Administered dose	
b	1/Administered dose	
c	1/Bioavailable dose	
d	administered dose/Bioavailable dose	

13	Elimination half-life is time taken for half of the amount of drug to get eliminated from	1
a	body	
b	liver	
c	kidney	
d	organ	
14	Name the model in which compartments are joined in series	1
a	mammillary model	
b	distributed parameter model	
c	physiologic model	
d	catenary model	
15	In case of multiple IV injections, the ratio of steady state concentration to initial concentration is called as	1
a	absorption factor	
b	maxima	
c	minima	
d	accumulation factor	
16	Select the cause for nonlinearity in drug distribution	1
a	saturation of binding sites on plasma proteins	
b	when a presystemic gut wall or hepatic metabolism attains saturation	
c	when absorption involves carrier-mediated transport systems	
d	when absorption is solubility or dissolution rate-limited	
17	Induction of drug metabolism leads to _____ in half-life of drug	1
a	unpredictable	
b	increase	
c	decrease	
d	remain constant	
18	While designing dosage regimen for narrow therapeutic index drug, the preferred method is	1
a	administered twice a day	
b	small doses administered at frequent intervals	
c	larger doses administered at relatively longer intervals	
d	small doses administered at longer interval	

19	The word "open" in the one compartment open model means	1
a	the input and output are unidirectional	
b	not applicable for administration of a single dose of a drug	
c	drug concentration in plasma is equal to that in other body tissues	
d	easy absorption	
20	Mechanism of drug absorption in rectal route is	1
a	passive diffusion	
b	pore transport	
c	endocytosis	
d	carrier mediated transport	
Q.II a	**Attempt any 2**	**2x10**
1	A drug following one compartment kinetics, after IV bolus administration of 250mg gave instantaneous plasma concentration of 34 mg/L. If half life of drug is 3.5 hrs, calculate,	
	i) Elimination rate constant and apparent volume of distribution	2
	ii) Total systemic clearance and AUC (Zero to infinity)	2
	iii) Plasma concentration after 1.5 hrs of administration.	2
	iv) Time required to eliminate 45% of dose	2
	v) What would be the new Co achieved if dose is changed to 400mg	2
2	Write a note on the concept of loading dose and maintenance dose.	10
3	Explain Carrier mediated absorption mechanism.	10
Q.II b	**Attempt any 7**	**7x5**
1	Write a note on gastric emptying.	5
2	Write assumptions of one compartment open model.	5
3	Explain the effect of active tubular reabsorption on the excretion of drugs with a suitable example.	5
4	Explain effect of compression force and method of granulation on drug absorption.	5
5	Discuss displacement interaction with any one suitable example.	5
6	Enlist various methods of measurement of bioavailability, discuss any one in detail.	5
7	Explain enzyme inhibition.	5
8	Explain how different parameters affect dissolution with the help of Noyes Whitney's equation.	5
9	Explain absorption and metabolism related causes for nonlinearity in pharmacokinetics.	5

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