Time: 3 hours **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.I		**Choose the appropriate option for following multiple choice questions**	**20**
	1	Use of pharmacokinetic principles to the design, conduct and interpretation of drug safety evaluation studies	**1**
	a	Population pharmacokinetics	
	b	Clinical pharmacokinetics	
	c	Therapeutic drug monitoring	
	d	Toxicokinetics	
	2	Absorption of Vitamin B12 from small intestine is brought about by	**1**
	a	Active transport	
	b	Passive transport	
	c	Carrier mediated transport	
	d	Ion pair transport	
	3	BCS Class II drug molecule has	**1**
	a	Low solubility and high permeability	
	b	High solubility and high permeability	
	c	Low solubility and low permeability	
	d	High solubility and low permeability	
	4	Following route of drug administration will exhibit maximum bioavailability	**1**
	a	Oral	
	b	Rectal	
	c	Intravenous	
	d	Topical	
	5	_____ involves adsorptive uptake of solid particulate	**1**
	a	Pinocytosis	
	b	Phagocytosis	
	c	Ion pair transport	
	d	Diffusion	
	6	Apparent volume of distribution is described as	**1**
	a	correlation between dose administered and plasma concentration	
	b	correlation between dose eliminated and plasma concentration	
	c	correlation between rate of elimination and plasma concentration	
	d	correlation between rate of absorption and plasma concentration	
	7	Site II of Human Serum Albumin is referred to as _____ binding site	**1**
	a	Warfarin	
	b	Diazepam	
	c	Tamoxifen	
	d	Digitoxin	
	8	Following is active process of urinary excretion	**1**
	a	Glomerular filtration	

b	Tubular secretion	
c	Biliary secretion	
d	Tubular filtration	
9	Hepatic clearance is given by:	1
a	Elimination rate X plasma drug concentration	
b	Hepatic excretion rate/ plasma drug concentration	
c	Plasma drug concentration / Hepatic excretion rate	
d	Elimination rate / plasma drug concentration	
10	Phase II reaction involves following reaction	1
a	Oxidation	
b	Conjugation	
c	Reduction	
d	Hydrolysis	
11	USP Dissolution Apparatus IV is called as	1
a	Paddle over disc	
b	Paddle	
c	Basket	
d	Flow through Cell	
12	Following is the pharmacodynamic method for studying bioavailability	1
a	Plasma level time studies	
b	Urinary excretion studies	
c	Stool excretion studies	
d	Therapeutic response	
13	Comparison of AUC of drug given by oral route of administration with AUC of drug given by intravenous route of administration is called as	1
a	Biopharmaceutics	
b	Bioequivalence	
c	Absolute bioavailability	
d	Relative bioavailability	
14	The steady state concentration Css for IV infusion is given by	1
a	Css= Infusion Rate- Total Systemic Clearance	
b	Css = Infusion Rate / Total Systemic Clearance	
c	Css = Total Systemic Clearance/Infusion Rate	
d	Css = Infusion Rate x Total Systemic Clearance	
15	Unit of clearance is given by	1
a	mg / hr	
b	mL/hr	
c	mg/L*hr	
d	hr/mL	
16	Wagner Nelson method is used to determine	1
a	K_E	
b	K_A	
c	AUC	
d	CL_T	
17	In the two-compartment open model IV bolus, the initial rapid decline in the drug concentration is due to	1

a	Absorption	
b	Distribution	
c	Metabolism	
d	Elimination	
18	In case of Multi compartment model, elimination is indicated by	1
a	α	
b	β	
c	μ	
d	γ	
19	In Michaelis Menton equation when 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	
20	Self induction of enzyme in case of carbamazepine causes _____ in half life of drug	1
a	decrease	
b	increase	
c	keeps constant	
d	decrease followed by increase	

Q.II a	**Attempt any Two.**	**2x10**
1 a	A single IV bolus injection containing 500 mg of an antibiotic is given to an adult patient (weight = 55 kg). The apparent volume of distribution is 0.1 L/kg and the elimination half-life is 0.75 hour. Assuming the drug is eliminated by first-order kinetics and described by one-compartment model, calculate the following a. Co b. Elimination rate constant and AUC c. The amount of drug in the body 4 hours after the dose is given d. The time for the drug to decline to 0.5μg/ml the minimum inhibitory concentration for streptococci	 **1** **2** **2** **2**
1 b	What is apparent volume of distribution? Derive the equation for apparent volume of distribution	**3**
2	Describe the concept of two compartment model and derive various pharmacokinetic parameters following two compartment open model IV bolus administration of drug.	**10**
3	Explain the concept of drug distribution and give a detailed note physicochemical properties of the drug affecting distribution with suitable examples	**10**
Q.II b	**Attempt any seven.**	**7x5**
1	Explain effect of any two dosage form related factors with suitable examples affecting drug absorption	**5**
2	Explain the mechanism of active transport of drug with suitable examples	**5**
3	Justify with reasons, human serum albumin considered a versatile protein for drug binding . Enlist various drug binding sites on human serum albumin	**5**
4	Explain the concept of IVIVC and discuss its significance.	**5**
5	Enlist the methods used for assessment of bioavailability of drug. Explain any one method in detail.	**5**
6	What are the causes on non linearity in absorption and metabolism of drug? Explain with suitable examples.	**5**
7	Explain the determination of absorption rate constant based on method of feathering following one compartment kinetics.	**5**

8	What is drug accumulation index? State the equations for determination of Maximum and minimum concentrations at steady state following multiple dosing.	**5**
9	Explain the concept of loading dose and maintenance dose of iv infusion.	**5**