

Total Marks 75

Time: 3 hours

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 questions 20
- 1 Pharmacokinetics is study of 1
- a Method of new drug development
- b Biological and therapeutic effect of drugs
- c Mechanism of drug action
- d Absorption, distribution, metabolism and excretion of drugs
- 2 Penetration through blood brain barrier is complicated because of 1
- a Meningitis
- b Rapid clearance from blood brain barrier
- c Absence of pores in the brain capillary endothelium
- d High lipid solubility of drugs
- 3 BCS class 3 drug is 1
- a High solubility high permeability
- b Low solubility high permeability
- c High solubility low permeability
- d Low solubility low permeability
- 4 In presence of food, absorption of Griseofulvin is 1
- a Delayed
- b Decreased
- c Increased
- d Unaffected
- 5 Reciprocating cylinder is official 1
- a USP Dissolution Test Apparatus II
- b USP Dissolution Test Apparatus III
- c USP Dissolution Test Apparatus IV
- d USP Dissolution Test Apparatus V
- 6 Comparison of Bioavailability between two dosage form is known as 1
- a Biological
- b Absolute bioavailability
- c Relative bioavailability
- d Biopharmaceutics

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- 7 Select therapeutic index of carbamazepine if therapeutic range is 4–12 $\mu\text{g/mL}$ 1
- a 3
- b 0.33
- c 4
- d 12
- 8 _____ is also known as realistic model 1
- a Mammillary model
- b Catenary model
- c Physiological model
- d Non compartmental analysis
- 9 Probable mechanism of absorption of a hydrophilic drug of molecular weight 50 dalton is 1
- a Facilitated diffusion
- b Pore transport
- c Passive diffusion
- d Endocytosis
- 10 Select a direct method of measurement of Bioavailability 1
- a Plasma Level time studies
- b Acute pharmacological response
- c Urinary excretion studies
- d Salivary excretion studies
- 11 Mixed order kinetics can be described by 1
- a Michaelis- Menten equation
- b Ficks law of diffusion
- c Noyes Whitney's equation
- d Hixon–Crowell Cube Root equation
- 12 A Multicompartment model assumes all rate constants are 1
- a Zero order
- b First order
- c Mixed order
- d Pseudo first order
- 13 Most abundant abundant plasma protein with large drug binding capacity is 1
- a Human serum albumin
- b I-Acid Glycoprotein
- c Orosomuroid
- d Lipoproteins

- 14 In case of multiple IV injections, the ratio of steady state concentration to initial concentration is called as 1
a Accumulation factor
b Maxima
c Minima
d Absorption factor
- 15 Nephron is functional unit of 1
a Liver
b Lung
c Heart
d Kidney
- 16 Principle site of oral absorption is 1
a Small intestine
b Stomach
c Large intestine
d Rectum
- 17 Select Phase II reaction 1
a Oxidative reactions
b Reductive reaction
c Hydrolytic reaction
d Sulfation reaction
- 18 In Michaelis- Menten equation When value of $K_m=C$ 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
- 19 Select a true statement 1
a Rate of excretion = Rate of filtration - Rate of Secretion - Rate of reabsorption
b Rate of excretion = Rate of filtration -Rate of Secretion + Rate of reabsorption
c Rate of excretion = Rate of filtration +Rate of Secretion - Rate of reabsorption
d Rate of excretion = Rate of filtration +Rate of Secretion + Rate of reabsorption
- 20 Absorption mechanism through rectal route is 1
a Endocytosis
b Facilitated diffusion
c Passive diffusion

d Pore transport

Q.IIa

Attempt any Two

2x10

- 1a A drug following one compartment kinetics, after IV bolus administration of 250 mg gave instantaneous plasma concentration of 34 mg/L. If half life of drug is 3.5 hrs, calculate,
- i) Apparent volume of distribution 1
 - 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
- 1b Write a note on Method of residuals. 3
- 2a Explain the concept of loading dose and maintenance dose of iv infusion. 5
- 2b Explain the concept of two compartment models. 5
- 3 Write a note on carrier mediated transport. 10

Q.II b

Attempt any Seven

7x5

- 1 Explain effect of gastric emptying on absorption of drugs.
- 2 Explain displacement interactions with any one suitable example.
- 3 Write limitations of pH partition hypothesis.
- 4 What is the modified Noyes Whitney equation? Explain how the various parameters affect the dissolution of drugs.
- 5 Explain the Dissolution Apparatus I as per I.P.
- 6 Explain the effect of urine pH and flow rate on drug excretion.
- 7 Explain absorption and elimination related factors causing non linearity in pharmacokinetics.
- 8 Write a note on enzyme inhibition.
- 9 Write assumptions of one compartment open model.
- 9 Explain any three methods to enhance bioavailability of poorly soluble drugs through enhancement of drug solubility or dissolution rate.