

Time: 3 Hours

Marks: 75

- N.B.:**
1. All questions are compulsory
 2. Draw diagram wherever necessary
 3. Figure to the right indicate full marks
 4. Use of scientific calculators is permissible

Q.1. Multiple Choice Questions (MCQs) (Answer all the 20 questions) 20 M

- 1 The solution which does not obey Raoult's law or shows deviation from Raoult's law is known as
 - a Real Solution
 - b Ideal Solution
 - c True Solution
 - d Coarse Dispersion
- 2 Parts of solvent required to dissolve one part of slightly soluble drug is
 - a From 100-1000
 - b From 1000-10000
 - c From 30-100
 - d From 10-30
- 3 In Osmotic tablets the driving force for diffusion of drugs is _____
 - a Pressure
 - b Temperature
 - c Concentration Gradient
 - d Electric Potential
- 4 Solvation of a solute with water is called as
 - a Hydration
 - b Sublimation
 - c Crystallization
 - d Vaporization
- 5 Which of the following statements is correct with regards to solubility of gases in water?
 - a Increases with increase in pressure
 - b Increases by addition of non-electrolytes
 - c Increases with increase in temperature
 - d Remains unaltered in case of solute reacting with solvent
- 6 Composition of two or more compounds that exhibits a melting temperature lower than that of any other mixture of the compounds
 - a Critical composition
 - b Eutectic composition
 - c Conjugate composition
 - d Alloys

- 7 The principle of Abbe's refractometer is based on measurement of _____
- a Critical angle
 - b Critical surface tension
 - c Contact angle
 - d Critical temperature
- 8 Which of the following is the mesomorphic phase?
- a Liquid complexes
 - b Liquid Crystal
 - c Eutectic mixture
 - d Supercritical fluid
- 9 Optically active substance can show its optical activity due to
- a Chiral Carbon in molecule
 - b Symmetry in Molecule
 - c Polarity of molecule
 - d Cohesivity of molecule
- 10 If the concentration of surfactant molecules increases above the critical micelle concentration (CMC), then they
- a Associate
 - b Dissociate
 - c Precipitate
 - d Decompose
- 11 At the liquid-gas interface
- a Adhesive forces are small
 - b Adhesive and cohesive forces are the same
 - c Cohesive forces are small
 - d Both adhesive and cohesive forces are large
- 12 A surfactant with a very low Hydrophile-Lipophile Balance (HLB) value ie 1-2 are
- a Solubilizing agent
 - b Anti-foaming agent
 - c Water in oil (w/o) emulsifier
 - d Oil in water (o/w) emulsifier
- 13 The surface tension usually decreases with
- a Increase in temperature
 - b Decrease in temperature
 - c Addition of electrolytes
 - d Decrease in surfactant concentration

- 14 Which of the following substance decrease surface tension of water
- a Sodium lauryl sulphate
 - b Urea
 - c Calcium carbonate
 - d Kaolin
- 15 Identify the naturally occurring chelate
- a Hemoglobin
 - b EDTA
 - c Dimercaprol
 - d Diethylenetriamine
- 16 Thesphere is enclosed in brackets in formula for complex species, and it includes the central metal ion plus the coordinated groups.
- a Co-ordination
 - b Ligand
 - c Chelate
 - d Complex
- 17 Exterior of Beta Cyclodextrin is hydrophilic due to_____.
- a Hydroxyl groups
 - b Ammonium groups
 - c Sulfate groups
 - d Pyrrolidone groups
- 18 pH of 1/100 N NaOH is
- a 10
 - b 11
 - c 13
 - d 12
- 19 Bursting of blood cells takes place in.....solution
- a Hypertonic
 - b Hypotonic
 - c Isotonic
 - d Neutral
- 20 Buffer capacity can be defined as the ratio of increment of strong base or strong acid to the.....
- a Small change in pH
 - b Small change in buffer concentration
 - c Small change in osmotic pressure
 - d Small change in temperature

Q2. Answer ANY TWO questions

20 M

1. Elaborate on factors affecting solubility of drugs and explain with examples polar, nonpolar, and semi-polar solvents.
2. Write a note on HLB scale and explain micellar solubilisation phenomenon. Calculate the HLB of Tween 20, if its saponification number is 45 and acid number is 250.
3. Define refractive index and give its applications. Explain design and working principle for Abbe's Refractometer.

Q3. Answer ANY SEVEN questions

35 M

1. Write a short note on the Langmuir's adsorption isotherm.
2. What is distribution law? Give its limitations and applications.
3. Elaborate on Aerosols and state its pharmaceutical applications.
4. Enlist the methods of analysis of complexes with examples and explain pH titration method in detail.
5. Explain Cryoscopic method to adjust tonicity of a solution. Calculate the amount of sodium chloride required for preparing 50 mL 1.5% Calcium Gluconate solution isotonic with blood serum? [Given: Sodium Chloride equivalent of Calcium Gluconate(E) is 0.16].
6. Explain buffer action of acidic buffer system with example and derive Henderson Hasselbalch equation for acidic buffer system.
7. Classify complexes with examples and explain inclusion complexes in detail.
8. Explain the concept of protein binding and give significance of protein binding in pharmaceuticals.
9. Explain the concept of diffusion and give its significance in pharmaceuticals.
