

Question Paper

Exam Date & Time: 29-Dec-2023 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Physical Pharmaceutics I [PCE-BP302T - S2]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) What is the unit of Partition coefficient? (1)
- [Pascal](#)
[%w/v](#)
[no units](#)
[%](#)
[v/v](#)
- 2) The process of solubilization by absorption of heat is ----- process (1)
- [Endothermic](#)
[Exothermic](#)
[initially endothermic followed by exothermic](#)
[Initially exothermic followed by endothermic](#)
- 3) Example for real solution showing negative deviation from Raoult's law----- (1)
- [Phenol-Water mixture](#)
[acetone-chloroform mixture](#)
[Benzene-toluene mixture](#)
[Nicotine-water mixture](#)
- 4) Experimental conditions used for solubility study are atmospheric pressure and at ... (1)
- [Room temperature](#)
[Room temperature, body temperature](#)
[4°C and 37°C](#)
[37°C](#)
- 5) Calculate the concentration in %w/v of a solution containing 20 gm of NaCl in 200 ml of aqueous solution (1)
- [20 % w/v](#)
[15 % w/v](#)
[10 % w/v](#)
[25% w/v](#)
- 6) Which of the following units has been used in relating the concentration of a solution with its vapor pressure in Raoult's law? (1)
- [mole fraction](#)

[mass percentage](#)

[molarity](#)

[% weight/ weight](#)

- 7) Calculation of HLB by Griffin is done by using following formula; (1)

[HLB = \(E + P\)/5](#)

[HLB = \$\frac{\sum \(\text{hydrophilic group number}\) - \sum \(\text{lipophilic group number}\) + 7}{7}\$](#)

[HLB = 20\(1 - S/A\)](#)

[HLB = \$\frac{\sum \(\text{hydrophilic group number}\) + \sum \(\text{lipophilic group number}\) - 7}{7}\$](#)

- 8) During the micellar solubilization p-hydroxy benzoic acid exists ----- (1)

[on the micelle surface between hydrophobic tails](#)

[At the core of the micelle](#)

[In an intermediate position between core and the surface of the micelle](#)

[on the micelle surface between polar heads](#)

- 9) Lamellar micelles are formed ----- (1)

[Below the critical micelle concentration](#)

[above the critical micelle concentration and at higher concentration](#)

[above the critical micelle concentration and in dilute solutions](#)

[At the critical micelle concentration](#)

- 10) Sorenson formula to calculate pH is----- (1)

[pH= \$pK_a + \log \left\[\frac{\(\text{salt}\)}{\(\text{Acid}\)} \right\]\$](#)

[pH= \$pK_a - \log \left\[\frac{\(\text{salt}\)}{\(\text{Acid}\)} \right\]\$](#)

[pH= \$\log \[H_3O^+\]\$](#)

[pH= \$-\log \[H_3O^+\]\$](#)

- 11) What is the useful pH range of indicator with pKa value 6.8? (1)

[4.8 to 9.2](#)

[4.2 to 7.4](#)

[5.3 To 8.3](#)

[6.2 to 7.6](#)

- 12) Which of the following buffers have been used to calibrate pH meter? (1)

[Buffers of pH 4, 7 and 9](#)

[Buffers of pH 7, 4.14 and 9](#)

[Buffers of pH 7.14, 4.0 and 9](#)

[Buffers of pH 7.4 and 9.14](#)

- 13) With decrease in temperature, vapor pressure of a liquid: (1)

[Decreases](#)

[Increases](#)

[Does not change](#)

[First increases and then decreases](#)

- 14) Quantity of heat absorbed when a solid changes to liquid without the change in temperature of material is known as: (1)
- [Latent heat of fusion](#)
[Latent heat of vaporization](#)
[Latent heat of sublimation](#)
[Latent heat of condensation](#)
- 15) In a chelate complex, ligand acts as: (1)
- [Electron pair acceptor](#)
[Electron pair donor](#)
[Lewis acid](#)
[Electrophile](#)
- 16) Caffeine-PABA complex is an example of: (1)
- [Monomolecular inclusion complex](#)
[Chelate](#)
[Organic molecular complex](#)
[Clathrate](#)
- 17) Following solution administration causes shrinkage of blood cells: (1)
- [Hypotonic](#)
[Isotonic](#)
[Hypertonic](#)
[Iso-osmotic](#)
- 18) pK_b of a weak base equal to pOH when? (1)
- [\[Base\]/\[Salt\] = 0](#)
[\[Base\]/\[Salt\] = 1](#)
[\[Base\]/\[Salt\] < 1](#)
[\[Base\]/\[Salt\] > 1](#)
- 19) 10%w/v Dextrose solution is _____ with blood. (1)
- [hypertonic](#)
[hypotonic](#)
[isotonic](#)
[iso-osmotic](#)
- 20) Which buffer system is mainly a biological buffer in blood plasma? (1)
- [Boric acid](#)
[Carbonic acid](#)
[Acetic acid](#)
[Citric acid](#)

II Long Answers

Answer all the questions.

- 21) Describe phenol-water system with neat labelled phase diagram. (7+3) (10)
- 22) Write about the concept, determination and pharmaceutical applications of Optical Rotation of drug molecules. (10)

III Short Answers

Answer all the questions.

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|-----|--|-----|
| 23) | Describe Freundlich adsorption isotherm. | (5) |
| 24) | Mention the Langmuir assumptions. | (5) |
| 25) | Write about the concept of polymorphism. | (5) |
| 26) | Explain the pharmaceutical applications of monomolecular inclusion complexes. | (5) |
| 27) | Discuss the kinetics of protein binding of drugs using double reciprocal plot. | (5) |
| 28) | Describe colorimetric method of pH estimation. | (5) |
| 29) | Discuss the concepts of isotonicity, hypotonicity and hypertonicity. | (5) |

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