Question Paper

Exam Date & Time: 08-Jan-2021 (09:30 AM - 12:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Physical Pharmaceutics I [PCE-BP302T - S3]

Marks: 75 **Duration: 180 mins.**

I Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

1) Calculate the grams of oxalic acid present in 5.0 ml of 1% w/v solution of oxalic acid. (1)

- 0.05 gm
- 0.50 gm
- 0.10 gm
- 1.00 gm

2) Real solutions showing positive deviations from Raoult's law show------ (1)

- Solvation and hydrogen bonding and thereby decreased solubility
- Solvation and hydrogen bonding and thereby increased solubility
- Association of the molecules of one of the constituents and thereby decreased solubility
- Association of the molecules of one of the constituents and thereby increased solubility

3) Conjugate solution is observed in ..... (1)

- Non-ideal (Real) systems
- Partially miscible systems
- Ideal solutions
- Immiscible liquid systems

4) The solubility of a solute in a given solvent is defined as -------- (1)

- Concentration of solute in saturated solution
- Concentration of solute at given temperature
- Concentration of solute in given solvent at equilibrium
- Concentration of solute in saturated solution at given temperature

5) The ability of a substance to dissolve in a given solvent depends on (1)

- Nature and intensity of forces present in solute.
- Nature and intensity of forces present in solvent.
- Interactions present between solute and solvent
- All the above

6) Indicate which of the following does not affect the solubility of solid solutes (1)

Stirring
Volume of solvent
Quantity of solute
Temperature

7) Micelle formed in aqueous phase ---------- (1)

Are surface active
Have hydrophobic core
Have hydrophilic core
Increases the surface tension

8) In adsorption studies the magnitude of adsorption of gas is dependent on... (1)

Pressure, temperature
Temperature, concentration
Concentration, pressure
Pressure, temperature and concentration

9) ---------- surfactants are commonly used in the preparations of shampoos. (1)

cationic
zwitter ionic
anionic
non-ionic

10) Phenolphthalein shows pink colour with liquids having pH only ------- (1)

Above 9.4
above 8.2
above 10.0
above 7

11) pH indicators are chemically..... (1)

Weak acids
Weak bases
Neutral compounds
Weak acid or weak bases

12) The colorimetric estimation of pH of solution requires..... (1)

pH electrode
standard buffer solutions
indicators
0.1 N HCl

13) _____ is also known as pseudopolymorph. (1)

Liquid crystal
Solvate
Liquid complex

All of the above

14) _____ is the process of conversion of a solid state of a substance to its gaseous state. (1)

Boiling
Evaporation
Condensation
Sublimation

15) Clathrates belong to the class of _____ complexes (1)

Metal
Inclusion
Organic molecular
None of the above

16) Ligand and metal ion in a complex represent _____respectively. (1)

Lewis acid and base
Lewis base and acid
Nucleophile and electrophile
Donor and accepter

17) Buffer system present in human plasma include..... (1)

Carbonic acid
Boric acid
Acetic acid
Sulphuric acid

18) 0.5%w/v sodium chloride solution is said to be _____ with physiological fluids. (1)

hypertonic
hypotonic
isotonic
none of the above

19) Buffer capacity can be defined as the ratio of increment of strong acid or base to the _____ (1)

Change in pH
Change in buffer index
Change in viscosity
Change in osmotic p

20) What is the pH of the buffer solution containing 0.4M of acetic acid and 0.4M of sodium acetate, respectively? (pKa of acetic acid is 4.76). (1)

4.46
4.76
5.06
5.36

II Long Answers

Answer all the questions.

1)	Derive Langmuir adsorption equation and explain with neat isotherm.	(10)
2)	Write short notes on dissociation constant and polymorphism.	(10)

III Short Answers

Answer all the questions.

1)	Discuss any five notations to express the solubility of drugs.	(5)
2)	Describe the phase diagram for 'triethylamine-water system'.	(5)
3)	Discuss protein binding kinetics using Klotz double reciprocal plot.	(5)
4)	Write a note on chelates and their pharmaceutical applications.	(5)
5)	Write short notes on liquid crystals.	(5)
6)	Differentiate between electrometric and colorimetric method of pH determination.	(5)
7)	Discuss the use of buffers in parenteral and ophthalmic products.	(5)

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