JHARKHAND Rai University RANCHI ACCREDITED BY NAAC

**End Semester / Reappear (Semester III) Examination Dec 2022**

**Programme: B. Pharm** **Full Marks: 75**
**Course: Physical Pharmaceutics I** **Time: 3 Hrs**
**Course Code: BP302T**
**Enrollment No: _____**

**Section I**

1. **Objective type questions. Answer all questions.** **20x1=20**

i. An example of a solute is
(a) Sugar (b) Egg whites (c) Water (d) Acetone

ii. When a saturated solution prepared at a higher temperature is cooled, we get
(a) Super cooled solution (b) Super saturated solution
(c) An equilibrium mixture (d) One molar solution

iii. Which of the following is an example of a non-ideal solution showing positive deviation?
(a) Chloroform + Benzene (b) Chlorobenzene + Bromobenzene
(c) Acetone + Carbon disulphide (d) Acetone + Aniline

iv. The equation C1/C2 = K is known as
(a) Distribution ratio (b) Partition coefficient (c) Distribution coefficient (d) Distribution law

v. The constant quantity of Boyle's Law is
(a) Mass and temperature of a gas (b) Only mass of the gas
(c) Only temperature of a gas (d) Mass and Pressure of a gas

vi. NaCl possess which shape?
(a) Tetragonal (b) Cubic (c) Hexagonal (d) Rhombic

vii. The ratio of the speed of light in air to the speed of light in the medium is called
(a) Dielectric constant (b) Viscosity (c) Refractive index (d) Surface tension

viii. The species with a maximum dipole among the following is
(a) $NF_3$ (b) $CO_2$ (c) $CH_4$ (d) $NH_3$

ix. The spreading coefficient (S) is given by following equation
(a) $Wa - Wc = \Upsilon L + \Upsilon S - \Upsilon LS - 2\Upsilon L$ (b) $S = \Upsilon L + \Upsilon S - \Upsilon LS$
(c) $S = \Upsilon S - (\Upsilon L + \Upsilon LS)$ (d) All of these

x. If common salt is dissolved in water then the surface tension of salt water is
(a)Decreased (b) Increased (c) No change (d) First increase then decrease

xi. O/W emulsifer have HLB value
(a) 15–18 b) 7–9 (c) 8–16 (d) 13–15

xii. Solubility curve is a curve drawn between

(a) Solubility and temperature
(b) Solubility and pressure
(c) Solubility and mole fraction
(d) None of these

xiii. Example of chelate

(a) Haemoglobin (b) Iodine (c) Ferrocene (d) Cisplatin

xiv. When more and more water is diluted with acids its H+ ion concentration will

(a) Increase (b) Decrease (c) Remains the same (d) Depends on the type of acids

xv. This is not an acidic buffer

(a) $H_2CO_3$ and $Na_2CO_3$ (b) $CH_3COOH$ and $CH_3COONa$

(c) $HClO_4$ and $NaClO_4$ (d) $H_3PO_4$ and $Na_3PO_4$

xvi. Solutions exerting osmotic pressure similar to that of the cell contents being analysed are called

(a) Hypertonic soln (b) Isotonic soln (c) Hypotonic soln (d) None of these

xvii. According to Freundlich adsorption isotherm, which of the following is correct?

(a) $x/m \alpha p1/n$ (b) $x/m \alpha p1$ (c) $x/m \alpha p^o$

(d) All are correct at different ranges of pressure

xviii. Stoke's falling sphere method is used to measure

(a) Surface tension (b) Viscosity (c) Interfacial rension (d) Vapour pressure

xix. Flux is directly proportional to concentration gradient, is statement of

(a) Fick's first law of diffusion (b) Fick's second law of diffusion

(c) Higuchi's equation (d) pH-Partition hypothesis

xx. The molar volume of a liquid at a temperature at which its surface tension is unity is called

(a) Parachor (b) Rheochor (c) Vapour pressure (d) Viscosity

## Section II

2. **Short Answer type questions. Answer any five.** **5x7=35**

a. Explain real solutions with examples.
b. Define a complex. Classify with example.
c. Define dielectric constant. Write a note on its applications in pharmacy.
d. Explain Griffin's scale in detail.
e. Write in detail electrometric determination of pH.
f. Write a note on Henderson-Hasselbalch equation.
g. What are buffer solutions. Derive buffer equation for a weak acid and its salt.

## Section III

**Long Answer type questions. Answer any two.** **2x10= 20**

3. State and explain Distribution law. Mention its limitations and applications
4. Define surface tension. Discuss the principle involved in capillary rise method.
5. Define refractive index. Discuss the working of Abbe's refractometer.

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