Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Physical Pharmaceutics I **Semester: III**
Program: B. Pharm. **Time: 03 hrs.**
Course Code: BP302T **Max. Marks: 75**
Instructions: All the sections are compulsory.

SECTION A

S. No.	CO		Marks
		Answer all the questions.	**20**
1.	**CO1**	Raoult's law states that "partial vapor pressure of each volatile constituent is equal to the product of vapor pressure of pure constituent and …… A. its mole fraction in the solution B. its molecular weight C. its molar concentration in the solution D. its concentration as normality	**1**
2.	**CO1**	For weak acids, when pH of the solution is 2 units higher than pKa, the % ionization of weak acid is ……%. A. 50 B. 90.9 C. 99 D. 99.9	**1**
3.	**CO1**	Which statement is correct regarding ideal solution? A. Mixing of two components result in change in the properties of components B. No heat is evolved or absorbed during solution C. Heat is evolved during solution D. Properties of resulting solution will have deviation from the addition of properties of individual components..	**1**
4.	**CO1**	Molecular association does not affect the value of partition co-efficient. A. True B. False	**1**
5.	**CO2**	The process of phase change from solid phase to gaseous phase is known as_____. A. Condensation B. Deposition C. Evaporation D. Sublimation	**1**
6.	**CO2**	Identify the example of colligative property of solute from the following. A. Freezing point depression B. Molecular weight C. Refractive Index D. Optical Rotation	**1**
7.	**CO2**	According to Charle's Law, _____ A. At a fixed pressure, the volume of a gas is proportional to the temperature of the gas B. the pressure of a fixed amount of gas at a constant temperature is inversely proportional to the volume of the gas C. At a constant volume, the pressure is directly proportional to temperature D. The volume of a sample gas is directly proportional the number of moles in the sample at constant temperature and pressure	**1**
8.	**CO2**	Which of the following instrument is used to estimate refractive index of a material? A. pH meter B. Polarimeter C. Conductometer D. Refractometer	**1**
9.	**CO3**	According to Langmuir adsorption isotherm, Rate of adsorption is _____ spaces on the surface of adsorbent.	**1**

		A. Directly proportional to unoccupied B. Inversely proportional to unoccupied C. Directly proportional to occupied D. Inversely proportional to occupied	
10.	**CO3**	Select all the true statements about micelles of surface-active agent. A. They are formed when concentration rises above CMC B. Has hydrophobic external surface C. Has hydrophilic core D. Used to enhance solubility of poorly soluble drugs	**1**
11.	**CO3**	Ball pen works on the principle of _____. A. Viscosity B. Surface tension C. Boyle's law D. Frictional force	**1**
12.	**CO3**	Name any two methods to determine surface tension.	
13.	**CO4**	Define chelates.	**1**
14.	**CO4**	In coordination chemistry, the donor atom of a ligand is_____ . A. A Lewis Acid B. Metal Ion C. Counter ion D. the atom in the ligand that shares an electron pair	**1**
15.	**CO4**	Clathrates type of complexes are also known as no bond complexes. A. True B. False	**1**
16.	**CO4**	Complex formation between drug and complexing agents _____. (Select all possible options) A. Does not affect the pharmacological activity of the agent B. Inhibit interaction with receptors C. Can not be used for removal of toxic metal ions from human bodies D. Does not affect the absorption of drugs	**1**
17.	**CO5**	What is buffer capacity?	**1**
18.	**CO5**	Define buffer.	**1**
19.	**CO5**	Intravenous solutions should always be isotonic because_____. A. Hypertonic solution results in swelling of RBCs B. Hypotonic solution results in shrinkage of RBCs C. Isotonic solution retains normal physiology and anatomy of the cells D. None of the above	**1**
20.	**CO5**	Which of the following equation is used to calculate the pH of buffer system after addition of small amount of alkali or base? A. Henderson-Hasselbalch equation B. Bernoulli's equation C. Fick's first law D. Buffer solution	**1**
SECTION B			
Answer any two questions of the following.			**20**
1.	**CO1**	(a) Enlist and explain in brief the factors that affect the solubility of the drug in aqueous solvents. (b) Highlight the significance of studying the distribution coefficient.	**5+5**
2.	**CO2**	Differentiate the properties of all the states of matter.	**10**
3.	**CO3**	a) Justify the use of micelle in the enhancement of solubility of poorly soluble drugs. b) Explain the different methods for determination of HLB value of surfactants.	**5+5**

SECTION C			
Answer any seven questions of the following.			**35**
1.	**CO5**	Name and explain the method that determines pH of solution on the range of 1 to 14.	**1+4**
2.	**CO1**	Describe the distribution phenomena and explain it with the help of Nernst Distribution law.	**5**
3.	**CO3**	Discuss the HLB scale for surfactants.	**5**
4.	**CO5**	How buffer solution maintains its buffer action? Explain with example.	**5**
5.	**CO4**	What is the need of studying complexation phenomenon?	**5**
6.	**CO2**	Explain the types of liquid crystalline phase.	**5**
7.	**CO5**	Write a short note of biological buffers in the human body.	**5**
8.	**CO4**	Tetracycline is not administered with milk. Justify the statement by identifying the process and providing reason.	**5**
9.	**CO4**	Discuss the effect of complexation and drug action with examples.	**5**
		Total	**75**