JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester III) Examination Dec 2024

Programme: B. Pharm

Course: Physical Pharmaceutics-I **Full Marks: 75**

Course Code: BP302T **Time: 3 Hrs.**

Enrolment no. _____

Q.No.	Questions	CO	Bloom Taxonomy Category	Marks
	Section I			
1	**Objective Type Questions**			
	i. Dipoles are created when dielectric is placed in _____ a. Magnetic Field b. Electric field c. Vacuum d. Inert Environment ii. HLB value of detergents is between _____ a. 1 to 3 b. 13 to 16 c. 14 to 16 d. 8 to 16 iii. The pH of pharmaceutical buffer system can be calculated by a. pH partition Theory b. Noyes Whitney law c. Henderson-Hasselbalch Equation d. Michalis Menten Equation iv. Two solutions are said to be isotonic if they exert same..... a. Viscosity b. Surface tension c. Osmotic pressure d. None of the above v. The pH value is calculated mathematically as the a. Negative log to base 10 OH- ion concentration b. Negative log to base 10 H+ ion concentration c. log to base 10 OH- ion concentration d. log to base 10 H+ ion concentration vi. Polysorbate 80 (tween 80) is a surfactant of type a. Amphi-ionic b. anionic c. cationic d. Non-ionic vii. Surface tension of a liquid is at critical temperature a. Zero b. One c. Negative d. Maximum viii. The HLB range for lipophilic surfactants is: a. 2 to 9 b. Below 10 c. 16 to 20 d. Above the 20 ix. Interfacial tension are invariably ____ surface tension a. Less than b. Equal to c. More than d. Double than x. The formula used for the determination of surface tension by capillary rise method a. $2^{\gamma}=\pi r\cos\omega$ b. $2^{\gamma}=\pi r2\cos\omega$ c. $2^{\gamma}=hrdg$ d. $2^{\gamma}=hr\rho g$ xi. The property of drug molecule that is usually modified by Complexation is: a. Particle size b. Particle shape c. Solubility d. All of the above xii. The buffer index can be defined as the ratio of the increment of the strong base or strong acid to the: a. Change in pH b. Change in buffer capacity c. Change in osmotic pressure d. None of the above xiii. The ability of a substance to exist as two or more crystalline phases with different arrangements of Molecules in crystal lattice is a. Cocrystal b. Crystal c.Polymorphism d. None of the above xiv. Strong acids are ionized at a. All pH values b. pH 1-4 only c. pH 7 d. pH above 10 xv. pH + pOH =? a. 10 b. 7 c. 14 d. 7.2 xvi. Which of the following is a fundamental property of matter that differentiates solids, liquids, and gases? a) Density b) Volume c) Shape d) Mass xvii. The process of changing from a solid to a liquid is known as: a) Sublimation b) Fusion c) Melting d) Condensation xviii. Which state of matter has the most kinetic energy and the least intermolecular forces? a) Solid b) Liquid c) Gas d) Plasma xix. The temperature at which a substance changes from a liquid to a gas at a given pressure is called the: a) Melting point b) Boiling point c) Freezing point d) Triple point xx. The critical point of a substance is the point at which: a) The substance is at its highest temperature. b) The substance cannot exist in the gaseous state. c) The substance is at its lowest pressure. d) The substance is at its highest pressure.	CO1	Remember	**1 x 20 = 20**

Section II				
2. Short Answer type questions.				**7 x 5 = 35**
a	How to prepare 500g of 5% w/w glucose solution?	CO1	Remember	
b	250 cm^3 of a gas is collected over water at 20°C and 100 kPa pressure. Calculate the volume of the drug gas at standard temperature and pressure (STP) given aqueous tension of water at 20°C is 2.334 kPa. (STP conditions: Pressure = 101.3 kPa, Temperature = 0°C).	CO2	Remember	
c	Calculate the HLB Value of polysorbate (Tween) 20. The saponification number of tween 20 is 45.5 and acid number is 276.	CO3	Remember	
d	Describe the kinetics of protein binding.	CO4	Understand	
e	Explain the Sorensen's scale with proper diagram.	CO5	Understand	
f	Explain the pH. Describe the buffers in pharmaceutical and biological system.	CO5	Remember	
	or			
	Provide an overview on isotonic solution with proper example. Describe the Isotonic solution and their types.	CO5	Understand	
g	Elaborate the definition of Complexation. Describe the classification of complex.	CO4	Remember	
	or			
	Describe the inclusion complex with proper example and diagram.	CO4	Remember	
Section III				
Long Answer Type questions				**2 x 10 = 20**
3	Elaborate the definition spreading coefficient. Describe the spreading coefficient with equation and application.	CO3	Apply	
	or			
	Elaborate the definition of surface and interface. Describe the measurement of surface and interface tension.	CO3	Create	
4	Create difference between crystalline solid and amorphous solids. Describe the Optical rotation and dielectric constant with proper diagram.	CO2	Create	
	or			
	Elaborate the states of matter and properties of matter and types of matter. How to bring changes in the state of matter?	CO2	Apply	

Course Outcomes (CO):

CO 1: Understand physicochemical properties (pH, solubility) of drug molecules for design and stability of dosage forms.

CO 2: Recollection of states of matter and its application in pharmaceutical drug or dosage form designing

CO 3: Principle of interfacial tension and solubilization as well as stabilization of drugs.

CO 4: Concepts of Complexation and drug-protein binding.

CO 5: Knowledge of pH and buffer in stabilization of pharmaceutical formulations.