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**BPHARM**  
**(SEM IV) THEORY EXAMINATION 2025-26**  
**PHYSICAL PHARMACEUTICS II – THEORY**

TIME: 3 HRS

M.MARKS: 75

**Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt all questions in brief.**

10 x 2 = 20

|    |                                                                                    |
|----|------------------------------------------------------------------------------------|
| a. | What is an ideal solubility parameter? Write its importance in pharmacy.           |
| b. | Define Solvation, Desolvation, and Association with one simple example each.       |
| c. | What is critical solution temperature (CST)? Write its types.                      |
| d. | What is a eutectic mixture? Give two examples used in pharmacy.                    |
| e. | Define Sorensen's pH scale and write its formula.                                  |
| f. | What is Critical Micellar Concentration (CMC)? Mention two factors that affect CMC |
| g. | Define Detergency. How is it different from simple cleaning?                       |
| h. | Define Nernst potential and Zetapotential.                                         |
| i. | What are chelating agents? Give two uses in pharmacy.                              |
| j. | Define viscosity and mention one factor affecting the viscosity of liquid.         |

**SECTION B**

**2. Attempt any two parts of the following:**

2 x 10 = 20

|    |                                                                                                                                                                          |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. | Explain solubility of liquids in liquids. Describe types of liquid-liquid solubility, factors affecting solubility, the role of CST, and simple pharmaceutical examples. |
| b. | Derive Raoult's Law for ideal solutions. Explain positive and negative deviations from Raoult's Law using easy examples and neat diagrams.                               |
| c. | Explain different methods used to measure surface tension and interfacial tension.                                                                                       |

**SECTION C**

**3. Attempt any five parts of the following:**

7 x 5 = 35

|    |                                                                                                                                                             |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. | Define tonicity. Write the difference between isosmotic and isotonic. Explain simple methods used to adjust tonicity.                                       |
| b. | Explain the classification of complexes, their properties, and important pharmaceutical applications with examples.                                         |
| c. | Classify surface-active agents (surfactants). Explain the HLB system and its importance in emulsification and solubilization.                               |
| d. | Describe buffer action in simple words. Write the Henderson-Hasselbalch equation and explain how buffers are used in biological and pharmaceutical systems. |
| e. | Write the differences between crystalline solids and amorphous solids based on structure, melting point, solubility, and stability. Give suitable examples. |
| f. | Explain Nernst Distribution Law. Write its applications and limitations in pharmacy in simple language.                                                     |
| g. | What is protein binding? Explain types of protein-drug binding, factors affecting it, and why it is important in pharmacokinetics.                          |