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Printed Page: 1 of 1
Subject Code: BP302T

Roll No:

BPHARM
(SEM III) THEORY EXAMINATION 2025-26
PHYSICAL PHARMACEUTICS I

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.	Define ideal solubility parameter and give its significance.
b.	Define Solvation, Desolvation, and Association with one example each.
c.	Explain critical solution temperature and mention its types.
d.	Define eutectic mixture. Give two pharmaceutical examples.
e.	Define Sorensen's pH scale and write its mathematical expression.
f.	What is Critical Micellar Concentration (CMC)? Mention any two factors affecting it.
g.	Define Detergency. How does it differ from cleaning?
h.	Differentiate between Nernst potential and Zeta potential.
i.	What are chelating agents? Write any two pharmaceutical applications.
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.	Describe in detail the solubility of liquids in liquids. Discuss the types, factors affecting mutual solubility, CST, and pharmaceutical applications.
b.	Derive Raoult's Law for ideal solutions. Discuss positive and negative deviations from Raoult's law with suitable examples and diagrams.
c.	Explain various methods used for the determination of surface and interfacial tension:

SECTION C

3. Attempt any *five* parts of the following: **7 x 5 = 35**

a.	Define isotonicity. Differentiate between isosmotic and isotonic solutions. Explain methods used to adjust tonicity
b.	Describe classification, properties, and pharmaceutical applications of complexation. Add examples for each class.
c.	Classify surface-active pharmaceutical systems. Explain HLB system and its role in emulsification and solubilization.
d.	Explain buffer action. Describe Henderson–Hasselbalch equation and applications of buffers in biological and pharmaceutical systems.
e.	Differentiate between crystalline and amorphous states based on structure, melting point, solubility, and stability. Give examples.
f.	Discuss Nernst Distribution Law. Explain its applications and limitations in pharmacy.
g.	Explain protein binding, types of protein–drug interactions, factors affecting protein binding, and its significance in pharmacokinetics.