13629

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Pharm-2022/B.Pharm-2023/B.Pharm-2024
Course Name – Physical Pharmaceutics I
Course Code - BP302T
(Semester III)

Full Marks : 75 **Time : 3:0 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 20=20

1. *Choose the correct alternative from the following :*

(i) Select the correct option for solubility of a molecule in unionized form.
a) Buffered solubility
b) Un buffered solubility
c) Intrinsic solubility
d) None of these

(ii) Select the correct place where lattice energy present in between the molecule of.
a) Solvent
b) Solute
c) Solute – solvent
d) All of these

(iii) Tell according to USP, soluble compound requires _____ part of solvent for 1 part of solute.
a) 1-10
b) 10-30
c) 30-100
d) 100-1000

(iv) State the correct representation of molarity.
a) gram mole in 1 lit
b) gram equivalent in 1 lit
c) moles of solute in 1 kg solvent
d) None of these

(v) Which of the following is primarily caused by adhesive forces?
a) Surface tension of water
b) Mercury forming droplets
c) Water climbing up a paper towel
d) Oil forming a thin film on the water's surface

(vi) What is the primary difference between cohesive and adhesive forces?
a) Cohesive forces occur between different substances, while adhesive forces occur within the same substance.
b) Cohesive forces occur within the same substance, while adhesive forces occur between different substances.
c) Both cohesive and adhesive forces occur between different substances.
d) Both cohesive and adhesive forces occur within the same substance.

(vii) Identify the correct solubility profile.
a) Anhydrous> Hydrates> Solvates
b) Hydrates> Solvates >Anhydrous

c) Solvates >Anhydrous> Hydrates
d) Anhydrous> Hydrates=Solvates

(viii) Identify the correct statement.

a) Solubility parameter is the square root of cohesive energy density
b) Solubility parameter is directly proportional to cohesive energy density
c) Solubility parameter is inversely proportional to cohesive energy density
d) Solubility parameter is equal to cohesive energy density

(ix) Identify the mechanism of non-polar solvent interaction.

a) VanderWaal's force
b) Hydrogen bonding
c) Dipole interaction
d) Dielectric constant

(x) Degree of freedom relates to.

a) number of phase
b) number of component
c) size of phase
d) Both number of phase and number of component

(xi) Choose from the following in phase rule, if phase number is increased degree of freedom will _____.

a) Increase
b) Not change
c) Decrease
d) No relation is present

(xii) In water and vapour system, predict the degree of freedom.

a) 2
b) 1
c) 0
d) 3

(xiii) Identify the state conversion which can be represented by the sublimation curve.

a) Liquid to solid
b) Liquid to vapour
c) Solid to liquid
d) Solid to vapour

(xiv) Iodoform is the example of _____ crystal system.

a) Tetragonal
b) Hexagonal
c) Rhombic
d) Monoclinic

(xv) HLB scale was discovered by_____.

a) Griffin
b) Teller
c) Emmett
d) Brunauer

(xvi) Which of the following method is used to obtain surface tension?

a) X-ray diffraction
b) Karl Fischer method
c) Capillary rise method
d) Sedimentation method

(xvii) Contact angle test is applied for measuring_____.

a) Efficiency of wetting agent
b) Efficiency of Foaming agent
c) Efficiency of O/W emulsifying agent
d) Efficiency of W/O emulsifying agent

(xviii) Identify which of the following is an example of cationic surfactant?

a) Benzalkonium chloride
b) Tween 80
c) Sodium lauryl sulphate
d) Sorbitan Monooleate

(xix) Select the buffer capacity is the maximum at_____.

a) pKa=pH
b) pKa
c) pKa>pH
d) pKa=concentration

(xx) Select the surface tension is defined as.

a) Force per unit area
b) Force per unit length
c) Energy per unit length
d) Force per unit volume

Group-B

(Short Answer Type Questions) 5 x 7=35

2. Classify surface active agents along with the range of HLB values. (5)
3. Explain the concept of protein binding along with its applications in pharmacy. (5)

4. Describe eutectic mixture with formulation examples. (5)
5. Discuss about surface tension by capillary rise method. (5)
6. Describe about carrier mediated and facilated diffusion. (5)
7. Explain the factors that affect the pH of buffered solutions. (5)

OR

Explain the methods to determine the tonicity of buffer solutions. (5)

8. Differentiate between isosmotic and isotonic solution. (5)

OR

Explain about buffer equation and buffer capacity. (5)

Group-C

(Long Answer Type Questions) 10 x 2=20

9. Illustrate in detail the significance of metal ion complexes along with its classification, applications and examples. (10)
10. Explain the details about Sorensen's pH scale with its significance. (10)

OR

Explain the significance of pH and buffer in pharmaceutical formulation and development, along with its modification strategies. (10)

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