

UKA TARSADIA UNIVERSITY

B.Pharm. (3rd Semester)

Subject :030020301 - Physical Pharmacy I

Duration: 3 Hours

Max. Marks:70.

Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

Section-1

Q-1 (A) Do as directed.

[07]

- I) Define polymorphism.
- II) Enlist types of liquid crystals with example.
- III) Enlist method to achieve liquifaction.
- IV) Write Henry's law for vapour pressure.
- V) Define colligative properties and enlist them.
- VI) Enlist method to determine osmotic pressure.
- VII) Define Salting out effect.

Q-1 (B) Answer the following in brief. (Any 4)

[08]

- I) Explain phase rule in brief.
- II) Give properties and significance of liquid crystals.
- III) Explain Isopiestic method to determine vapour pressure.
- IV) Derive an equation to determine molecular weight of solute.
- V) Explain BCS according to solubility.
- VI) Explain positive and negative deviation from Raoult's law.

Q-2 Answer the following.

[10]

- A) Explain theory of electrolytic dissociation of Arrhenius theory.

OR

- A) Explain two component system containing solid liquid phase.

- B) An aqueous solution of glycerine of 7% by weight was prepared. The solution was found to have a density of 1.0149 g/cm^3 at 20°C . the molecular mass of glycerine is 92.1 g/mol and density is 1.2609 g/cm^3 at 20°C . Calculate its molarity and molality.

OR

- B) The vapour pressure of Freon 11 and Freon 12 are 103.425 kPa and 586.075 kPa respectively. These propellants are mixed in the mole ratio of 0.6 to 0.4. Calculate the partial vapour pressure of the propelements and total vapour pressure of mixture.

Q-3 Answer the following in detail. (Any 2)

[10]

- A) Enlist method to determine freezing point depression and explain any one in brief.
- B) Explain Aerosol inhalers system.
- C) Enlist theories of osmosis and explain any three in brief.

Section-2

Q-4 (A) Do as directed.

[07]

- I) Comment: Thixotropy indicates gel-sol-gel transformation, while negative thixotropy indicates sol-gel-sol transformation. True or false. Justify
- II) Define Newtonian flow. Give its type.
- III) Define angle of repose.
- IV) Define shape factor.
- V) Give two applications of micromeritics study.
- VI) Define buffer capacity.
- VII) Give an equation to calculate maximum buffer capacity.

Q-4 (B) Answer the following in brief. (Any 4)

[08]

- I) Explain buffer equation of weak acid.
- II) Explain factors affecting pH of buffer solution.
- III) Explain Bulges and Spur.
- IV) Explain plug flow.
- V) Write a note on particle number.
- VI) Give different types of density.

Q-5 Answer the following.

[10]

- A) Give difference between Plastic and Pseudoplastic flow.

OR

- A) Calculate the gram of sodium chloride needed to make 30 ml of a 20% isotonic physostigmine salicylate solution using sodium chloride method (The E value of drug is 0.16)

Q-6 Answer the following in detail. (Any 2)

[10]

- A) Write principle and working of cup and bob viscometer.
- B) Enlist method to determine particle size and explain conductivity method to determine particle volume.
- C) Enlist methods to adjust tonicity and explain Class II method.