

# UKA TARSADIA UNIVERSITY

B.Pharm. (4<sup>th</sup> Semester)

Subject :030020401-Physical Pharmacy II

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 Gold Number.
- II. Define Kraft Point.
- III. Enlist the factors influencing setting in Suspensions.
- IV. "Creaming is not considered as a mark of instability of emulsion." True OR False. Explain.
- V. Enlist Identification tests for type or emulsion.
- VI. Define Stoichiometric ratio.
- VII. Flocculated suspensions have low Sedimentation volume, F, than deflocculated Suspensions. True OR False. Explain.

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

[08]

- I. Explain association colloids in brief.
- II. Explain protective Colloidal action in brief.
- III. Write a note on structured Vehicle.
- IV. Explain phase inversion in emulsion.
- V. Write a note on Clathrates.
- VI. Explain any one method of analysis of complexes.

### Q-2 Answer the following.

[10]

- A. In case of complexation behavior of caffeine and PABA, calculate donor acceptor ratio from following data.
- a. Solubility of PABA =  $4.58 \times 10^{-2}$  mol/l
  - b. Total PABA Taken =  $7.3 \times 10^{-2}$  mol/l
  - c. PABA at Saturation point =  $5.5 \times 10^{-2}$  mol/l
  - d. Concentration of caffeine at Saturation point =  $1.8 \times 10^{-2}$  mol/l
  - e. Concentration of caffeine at excess Solid acid =  $3.6 \times 10^{-2}$  mol/l

**OR**

- A. Explain theory of emulsifications.
- B. Explain Donan Membrane equilibrium.
- OR**
- B. Classification of colloids and comparative account of their general properties with each other.

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

[10]

1. Write a note on monomolecular inclusion complex.
2. Write a note on DLVO theory.
3. Write a note on controlled flocculation.

## SECTION - 2

**Q-4 (A) Do as directed.**

**[07]**

- I. Enlist methods to determine Surface tension.
- II. Define critical Surface tension.
- III. Give one example of Pseudo first order reaction.
- IV. Enlist methods to determine order of reaction.
- V. Write fick's first law or diffusion.
- VI. Define Sink condition in dissolution.
- VII. "Benzene Spreads on water" True or False. Explain

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

**[08]**

- I. Write a note on Spreading co-efficient.
- II. Draw adsorption isotherm for Type I, II, and III.IV & V material.
- III. Explain half life and shelf life for 1<sup>st</sup> order reaction.
- IV. Explain in brief any two factors affecting reaction rates.
- V. Explain dissolution type II USP apparatus.
- VI. Explain Higuchi model in brief.

**Q-5 Answer the following.**

**[10]**

- A. How can you determine HLB Value of any Surfactant? Calculate HLB value for following surfactant.  
Structural Formula:  $\text{CH}_3 ((\text{CH}_2)_{11} \text{SO}_4^- \text{Na}^+$

Group	Group No.
$\text{SO}_4^- \text{Na}^+$	38.7
$\text{CH}_3$	0.475
$\text{CH}_2$	0.475

**OR**

- A. Write a note on steady state diffusion.
- B. The decomposition of glucose in aqueous acid solution was found to follow a first order. The initial concentration was found to be 0.056M. The concentration after a period of 12 h was  $4.10 \times 10^{-2}$  mol/l.
- a. Calculate reaction rate Constant.
  - b. Calculate the quantity of glucose remaining undecomposed after 8 h.
  - c. Estimate the amount of glucose lost during the period of 24 h.

**OR**

- B. Write a note on micellar solubilization

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

**[10]**

1. Explain electric double layer theory.
2. Write a note on wetting phenomena.
3. Write a note on 2<sup>nd</sup> order reaction. Derive equation of half life for same.