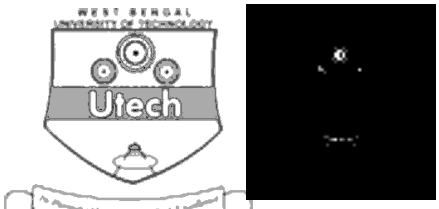
# CS/M.TECH (LT)/SEM-2/MLT-201/09
## COLLOID AND SURFACE CHEMISTRY ( SEMESTER - 2 )



1. .....
*Signature of Invigilator*

2. .....
*Signature of the Officer-in-Charge*

***Reg. No.***

***Roll No. of the Candidate***

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**CS/M.TECH (LT)/SEM-2/MLT-201/09**

**ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009**

**COLLOID AND SURFACE CHEMISTRY ( SEMESTER - 2 )**

Time : 3 Hours ] [ Full Marks : 70

***INSTRUCTIONS TO THE CANDIDATES :***

1. **This Booklet is a Question-cum-Answer Booklet.** The Booklet consists of **32 pages**. **First page** of the Booklet shows Instructions to the Candidates. The **questions** of this concerned subject commence from **Page No. 3**.
2. You have to answer the questions in the space provided marked 'Answer Sheet'. Write on both sides of the paper.
3. Fill in your Roll No. in the box provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. Use of Mobile Phone, Calculator or Log table is totally prohibited in the examination hall.
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, which will lead to disqualification.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

**No additional sheets are to be used and no loose paper will be provided**

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**FOR OFFICE USE / EVALUATION ONLY**

Marks Obtained

| ***Question Number*** | | | | | | | | | | | ***Total Marks*** | ***Examiner's Signature*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Marks Obtained*** | | | | | | | | | | | | |

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**Head-Examiner/Co-Ordinator/Scrutineer**

**50001 (30/06)**

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# CS/M.TECH (LT)/SEM-2/MLT-201/09

## COLLOID AND SURFACE CHEMISTRY

### SEMESTER – 2

Time : 3 Hours ] [ Full Marks : 70

*The questions are of equal value.*
*Candidates are required to give their answers in their own words as far as practicable.*

Answer any *five* questions. 5 × 14 = 70

1. Colloids possess certain unique, electrical and optical properties. Discuss.

2. What are surfactants ? Discuss the individual characteristics of the different types of surface active agents used in the preparation of emulsions.

3. A number of methods are available for the measurement of surface tension. Discuss their procedure and fields of application including limitations, if any.

4. Wetting of a surface depends on contact angles. Discuss their relationship. Carbon disulphide $\left(\gamma = 26 \times 10^{-3}\ J/m^2\right)$ is used to clean gold surface ( surface energy of clean gold is $144{\cdot}8 \times 10^{-3}\ J/m^2$ ). If the spreading coefficient is measured at 53·0 units and contact angle at 40°, calculate the Film pressure.

5. Explain the formation of 'Micelle' and hence explain the term 'Critical Micelle concentration'. Discuss the different methods used in industry for the stabilisation of emulsions.

6. Differentiate between physical absorption and chemical absorption. Discuss how absorption isotherms are generated. Discuss the characteristic features of any two of the adsorption isotherms.

7. Discuss the uses of HLB method, in surface chemistry. Calculate the HLB value for a mixture of 60 gm of SPAN ( HLB = 5·6 ) and 20 gm of TWEEN 21 ( HLB = 13·3 ).

END