

Roll No.

24005

B. Tech. 2nd Semester "F Scheme"

Examination – May, 2010

ENGINEERING CHEMISTRY

Paper : CH-101-F

Time : Three hours] [Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) What is condensed phase rule ?
- (b) What is an inhibitor ? Give an example.
- (c) Why does hard water consume lot of soap ?
- (d) What are Ion exchange resins ?
- (e) What is the effect of pH on corrosion ?
- (f) Explain cloud & pour point.
- (g) Differentiate between Homo-polymer and co-polymer.
- (h) Define degree of polymerisation.

- (i) What is hypsochromic shift ?
(j) What is molecular Spectra ? $2 \times 10 = 20$

SECTION - I

2. (a) What is thermal analysis ? Draw and explain the cooling curve of a pure substance and mixture. 10
(b) Derive the Gibb's phase rule equation. 10
3. (a) Give in detail the mechanism of enzyme action. 10
(b) Write short notes on :
(i) Homogeneous and Heterogeneous catalysis,
(ii) Action of Promoter in a catalyst. 6, 4

SECTION - II

4. (a) Define Alkalinity of water. How is it determined ? 10
(b) Calculate the temporary hardness and permanent hardness of a sample of water containing
 $Mg(HCO_3)_2 = 7.3 \text{ mg/l}$ $Ca(HCO_3)_2 = 16.2 \text{ mg/l}$
 $MgCl_2 = 9.5 \text{ mg/l}$ $CaSO_4 = 13.6 \text{ mg/l}$. 5
(c) Write short note on colloidal and calgon conditioning. 5
5. (a) Discuss the function of lime and soda in lime soda process give equation. 10
(b) Discuss the following : 10
(i) Break point chlorination,
(ii) Electrodialysis

SECTION - III

6. (a) Discuss the mechanism of Electrochemical corrosion. 10
(b) Write short notes on : 10
(i) Microbiological corrosion,
(ii) Anodic protection.
7. (a) Discuss the mechanism of hydrodynamic lubrication. Under what conditions are greases preferred to lubricating oil. 10
(b) Why additives are used in lubricants. Give some example. 5
(c) Define viscosity Index and Saponification value. 5

SECTION - IV

8. (a) Discuss the effect of structure on properties of polymer. 10
(b) What are silicones and how are they prepared ? Discuss the important properties and uses. 10
9. (a) Discuss the principle and working of a spectrophotometer. 10
(b) What is the importance of Finger Print region in IR Spectroscopy ? 5
(c) Discuss Chromophore and Auxochrome. 5