

**24005**

**B.Tech. 1st Semester Examination,**

**December-2013**

**ENGG. CHEMISTRY**

**Paper-CH-101-F**

*Time allowed : 3 hours ] [ Maximum marks : 100*

*Note : Question No. 1 is compulsory and of short answer type each question carries equal marks. Attempt five questions in total selecting at least one question from each section.*

1. (a) Give two example of Induced and Auto catalysis.
- (b) What are the units of hardness ?
- (c) What are Zeolites ?
- (d) Explain the term Degree of freedom.
- (e) What is Coagulation ?
- (f) What is Hypsochomic shift ?
- (g) What is Pilling - Bedworth ratio ?
- (h) What do you understand by Homopolymer and Co-polymer ?
- (i) Explain Viscosity index.
- (j) Explain finger print region in IR spectroscopy.

$2 \times 10 = 20$

## Section-I

2. (a) What do you mean by congruent and incongruent melting point ? Discuss  $\text{Na}_2\text{SO}_4$  -  $\text{H}_2\text{O}$  system in detail. 12
- (b) Discuss Pattinsons process. 8
3. (a) What is enzyme catalysis ? Give some example and explain its mechanism. 10
- (b) Explain the following with suitable example :
- (i) Promotor
- (ii) Catalytic poisoning 5,5,

## Section-II

4. (a) Define Alkalinity. How is it determined ? 12
- (b) A sample of water on analysis has been found to contain the following in ppm
- $\text{Ca}(\text{HCO}_3)_2 = 20.5$ ,  $\text{Mg}(\text{HCO}_3)_2 = 25.0$ ,  
 $\text{CaCl}_2 = 16.4$ ,  $\text{MgSO}_4 = 5.2$
- Calculate temporary and permanent hardness. 8
5. (a) What do you understand by softening of water ? Describe Demineralization process. What are the advantages and limitation of the process ? 12
- (b) Discuss Break point chlorination. 8

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24005

**Section-III**

6. (a) Discuss the important factor which govern the extent and rate of corrosion of a metal. 10
- (b) Write short note on :
- (i) Anodic protection
- (ii) Stress corrosion 5,5
7. (a) What are emulsion lubricants and how are they classified ? Discuss important characteristics of each type and mention their significance. 10
- (b) Give a brief account of hydrodynamic lubrication. Discuss its mechanism and important feature. 10

**Section-IV**

8. How are the properties of a polymer effected with structure ? Write down preparation properties and uses of PVC and UF resin. 20
9. (a) What is Differential Thermal Analysis ? Describe its technique and important applications. 14
- (b) Explain Lambert-Beer law. 6