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 Viscocity index.

(j) Explain finger print region in IR spectroscopy. 2×10=20

Section–I

2. (a) What do you mean by congruent and incongruent melting point ? Discuss Na_2SO_4 H_2O 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

$Ca(HCO_3)_2 = 20.5$, $Mg(HCO_3)_2 = 25.0$, $CaCl_2 = 16.4$, $MgSO_4 = 5.2$

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

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