

1985

B.E. 1st Semester Examination,

December-2012

CHEMISTRY

Paper-CH-101-E

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt any five questions in all.

1. (a) Prove that for an ideal gas

$$(i) \quad \Delta S = C_v \ell_n \frac{T_2}{T_1} + R \ell_n \frac{V_2}{V_1}$$

$$(ii) \quad \Delta S = C_p \ell_n \frac{T_2}{T_1} - R \ell_n \frac{P_2}{P_1} \quad 10$$

(b) Discuss the physical significance of chemical potential. 4

(c) Explain the concept of entropy. 6

2. (a) Draw and discuss the phase diagram of water system. 10

(b) Justify the statement "The Eutectic is a Mixture not a compound". 5

(c) What do you understand by Reduced phase rule? 5

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[P.T.O.]

3. (a) Define Alkalinity. How is it determined ? 10
 (b) Write short note on EDTA conditioning. 4
 (c) A sample of water on analysis has been found to contain the following in ppm.

$$\text{Ca (HCO}_3)_2 = 10.5, \quad \text{Mg (HCO}_3)_2 = 12.5$$

$$\text{CaCl}_2 = 8.2 \quad \text{CaSO}_4 = 7.5$$

Calculate the temporary and permanent hardness in degree French. 6

4. (a) Discuss the function of lime and soda in lime soda process. 10
 (b) Write short note on
 (i) Ion-Exchange resin
 (ii) Co-agulation. 5,5

5. (a) Discuss the factor effecting the corrosion. 10
 (b) Write short note on Impressed current method for cathodic protection. 5
 (c) What do you mean by Galvanic corrosion. 5

6. (a) Define the term Lubrication and Lubricants. What are different type of lubricants ? Discuss extreme pressure Lubricants. 12

- (b) Write short notes
- (i) Iodine value
 - (ii) Viscosity index. 3,5
7. (a) What are elastomer ? Give preparation, properties and uses of SBR and NBR. 10
- (b) What are the differences between thermoplastic and thermoset ? 4
- (c) Write short note on co-ordination polymerisation. 6
8. (a) What are the advantages of conductometric titration over ordinary titration using indicator ? 4
- (b) Write a self explanatory note on Flame photometry. 10
- (c) Write short note on TGA. 6