Roll No. ....

Total Pages : 2

8017

BT-I/D09

CHEMISTRY

Paper : CH-101(E)

Time : Three Hours]   [Maximum Marks : 100

Note : Attempt *five* questions, selecting at least *one* question from each part.

PART–A

1. (a) What is Entropy ? Prove that $\Delta S \geq 0$.   (10)

   (b) Derive Clausius-Clapeyron equation.   (10)

2. (a) Show that entropy change for an ideal gas is given by

   $$\Delta S = C_p \ln \frac{T_2}{T_1} - (C_p - C_v) \ln \frac{P_2}{P_1}.$$ (10)

   (b) What is Second law of Thermodynamics ? Discuss Kelvin and Clausius statement, and show that these statements are equivalent.   (10)

PART–B

3. (a) Write down the characteristics of potable water. Discuss various sources of potable water and required treatment.   (10)

   (b) What is Reverse Osmosis ? With neat diagram, discuss its functioning.   (10)

4. (a) What is Ion exchange ? Discuss the various ion exchange resins being commercialy used in water purification.   10

(b) Discuss Conservation of Water. How can we keep water-bodies safe from polluted water ?   (10)

PART–C

5. (a) What is Corrosion ? Discuss the various types of corrosion.   (10)

   (b) What are the different protective layers which are provided to protect metals from corrosion ?   (10)

6. (a) What is Lubrication ? Discuss the various mechanisms of lubrication.   (10)

   (b) Define (i) Flash point, (ii) Fire point, (iii) Viscosity index, and (iv) Acid value.   (10)

PART–D

7. (a) What is Polymer ? Discuss its classification.   (10)

   (b) What are common additives incorporated in polymers ? Explain the functions of each.   (10)

8. (a) What are Silicone polymers ? Discuss the general forms of silicon compounds that are in polymeric forms.   (10)

   (b) Define the following :   (10)

   (i) Composites.

   (ii) DTA.

   (iii) PVC.

   (iv) Flame photometry.

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