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BT-2/JX 8276

Chemistry—II (2005 onwards)

Paper : CH-101E

Time : Three Hours] [Maximum Marks : 100

Note :— (1) Attempt any **FIVE** questions in all, selecting at least **ONE** from each unit.

(2) All questions carry equal marks.

UNIT—1

1. (a) At what temperature will water boil under a pressure of 790 mm ? The latent heat of vaporisation of water is 540 cal/gm. ($R = 1{\cdot}987$ cal K^{-1} mol^{-1})

   (b) Calculate vapour pressure of water at 80°C if its value at 100°C is 76·0 cm. The latent heat of vaporisation is 540 cal/g. ($R = 1{\cdot}987$ cal K^{-1} mol^{-1}). 10×2=20

2. Explain the following terms in respect of Phase Rule. Also mention suitable examples with each term :

   Phase, Component, Degree of Freedom, Metastable equilibrium, Eutectic temp. and mixture. 20

UNIT—2

3. (a) How is the hardness of water sample is estimated by EDTA method ? Describe the chemical equations involved in it. 10

   (b) Calculate the temporary and permanent hardness of a water sample containing the following :

   $Ca(HCO_3)_2 = 16{\cdot}2$ mg/L, $Mg(HCO_3)_2 = 7{\cdot}3$ mg/L, $MgCl_2 = 9{\cdot}5$ mg/L and $CaSO_4 = 13{\cdot}6$ mg/L. 10

4. (a) What is potable water ? What are its chief requirements ?

   (b) Calculate the amount of lime and soda required to soften 10,000 litres of water containing the following ions per litre :

   $Mg^{2+} = 4{\cdot}8$ mg, $Ca^{2+} = 16{\cdot}0$ mg, $HCO_3^- = 73{\cdot}2$ mg. 10+10

UNIT—3

5. Write notes on the following :—
   (a) Electrochemical theory of corrosion.
   (b) Stress corrosion.
   (c) Waterline corrosion. 8, 6, 6

6. (a) Define pour point, aniline point and sligh oxidation number alongwith their significance.
   (b) Explain the term Consistency and Drop-point of grease. What are their significance ?
   (c) Discuss extreme-pressure lubrication. 9, 6, 5

UNIT—4

7. (a) Explain the mechanism of Anionic mechanism of polymerisation.
   (b) Discuss the preparation, properties and uses of Bakelite resins.
   (c) Explain the term :
   Syndiotactic, Isotactic, Atactic, Graft Copolymers, Block Copolymers. 5, 5, 10

8. (a) Write a note on '*Flame-photometry*'.
   (b) Explain the working of '*Thermogravimetric analysis*'.
   (c) Discuss silicones, its preparation and uses. 6, 6, 8