Code No: 09A1BS03 | **R09** | **Set No. 4**

**I B.Tech Regular Examinations,JUNE 2010**
**ENGINEERING CHEMISTRY**
**Common to CE, ME, CHEM, BME, IT, MECT, MEP, AE, BT, AME, ICE,**
**E.COMP.E, MMT, ETM, EIE, CSE, ECE, EEE**
Time: 3 hours                                             Max Marks: 75
**Answer any FIVE Questions**
**All Questions carry equal marks**
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1. What is meant by a phase diagram? With the help of a phase diagram, explain the following ?

    (a) Triple point

    (b) Eutectic point.                                                    [15]

2. Classify the following fuels space by furnishing proper reasons.

    (a) Coke

    (b) Petroleum

    (c) Benzol

    (d) Biogas

    (e) Lignite

    (f) LPG

    (g) Natural gas

    (h) Anthracite.                                                        [15]

3. What is meant by coagulation of colloids? How is it brought out?        [15]

4. (a) Why is hard water harmful to boilers?

    (b) Describe the causes and harmful effects of scale formation.

    (c) One liter of water from Khammam Dist. in Andhra Pradesh showed the following analysis: $Mg(HCO_3)_2 = 0.0256$ gms, $Ca(HCO_3)_2 = 0.0156$ gms, NaCl $= 0.0167$ gms, $CaSO_4 = 0.0065$ gms, and $MgSO_4 = 0.0054$ gms. Calculate the lime & soda required for softening of 10,000 litres of water.        [4+4+7]

5. (a) What is the difference between free-radical and ionic chain polymerization?

    (b) Write a note on preparation, properties and uses of

        i. bakelite
        ii. PVC.                                                           [5+5+5]

6. How are the following properties influence the stability of refractories?

    (a) Chemical innertness.

    (b) Refractoriness under load.

    (c) Refractoriness.

    (d) Dimentional stability.                                                [15]

7.  (a) What do you understand by electrochemical series? How is this series useful in the determination of corrosion of metals. 8M

    (b) The resistance of a 0.1N solution of an electrolyte of 40 ohms. If the distance between the electrodes is 1.2 cm and area of cross section is 2.4 cm2. calculate equivalent conductivity.                           [8+7]

8.  (a) Discuss the influence of following factors on corrosion:-

      i. Over voltage

      ii. Nature of the metal

      iii. Nature of environment.

    (b) Explain the nature and role of constituents of organic paints.         [9+6]

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