MODEL PAPER

Subject Code: R161105/R16 **Set No - 1**

I B. Tech I Semester Regular Examinations Nov. - 2016

ENGINEERING CHEMISTRY

(Common to AE,BioTech,ChemE,CE,MinE,MetalE,PE,PCE,AME,ME)

Time: 3 hours **Max. Marks: 70**

Question Paper Consists of **Part-A** and **Part-B**
Answering the question in **Part-A** is **Compulsory**,
Four Questions should be answered from **Part-B**

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PART-A

1. (a) Discuss the preparation of Thiokol.
   (b) Define HCV and LCV.
   (c) Differentiate reversible and irreversible cells.
   (d) State any four important properties of fullerenes.
   (e) Write briefly about breakpoint chlorination.
   (f) What is viscosity index of lubricating oil?
   (g) Write the anode and cathodic reactions occurring in CH_3OH-O_2 fuel cell.

[7 x 2 = 14]

PART-B

2. (a) Discuss (i) emulsion polymerization (ii) p-conducting polymers.
   (b) Explain compounding of plastics.

[8+6]

3. (a) Differentiate octane and cetane number.
   (b) Calculate the higher and lower calorific value of a fuel that contains 85% carbon, 1.5% sulphur, 0.6% nitrogen, 5.5% hydrogen and 7.4% oxygen. (Latent heat of steam is 587 cal/grams).
   (c) Explain fixed bed catalytic cracking method for synthesis of petrol.

[4+4+6]

4. (a) Explain the construction and working of dry cell.
   (b) Explain (i) Pitting corrosion (ii) Impressed current cathodic protection (iii) Electroless plating

[5+9]

5. (a) Explain sol-gel method of preparing nano materials.
   (b) Discuss the types of super conductors.
   (c) Explain any one method of green synthesis.

[5+5+4]

6. (a) Explain electro-dialysis method for desalination of water.
   (b) Discuss the troubles caused by boiler scales and how can they be minimized.
   (c) A sample of hard water gives the following results on analysis: $Ca(HCO_3)_2$ – 16.2 ppm, $Mg(HCO_3)_2$ – 14.6 ppm, $CaCl_2$ - 22.2 ppm, $MgCl_2$ – 9.5 ppm, $CaSO_4$ – 13.6 ppm and $MgSO_4$ – 12 ppm. Calculate the lime and soda required for softening 10,000 litres of this water.

[5+4+5]

7. (a) Explain setting and hardening of cement.
   (b) Write notes on (i) Refractoriness under load (ii) Extreme pressure lubrication.

[7+7]

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