Code: 13A51101

B.Tech I Year (R13) Supplementary Examinations December/January 2014/2015
ENGINEERING CHEMISTRY
(Common to all branches)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
   (a)   What is corrosion? Give two suitable examples.
   (b)   Give preparation of Thiokol rubber.
   (c)   Define Octane number.
   (d)   Give composition of cement.
   (e)   What is caustic embrittlement?
   (f)   What is calgon conditioning?
   (g)   What are the criteria of refractory?
   (h)   Define gross and net calorific values.
   (i)   Mention five important applications of liquid crystals.
   (j)   What is cathodic protection? Give one example.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

2   Explain electro chemical theory of corrosion with diagram.
OR
3   (a)   Discuss the voltametric sensors.
    (b)   Write on Hydrogen-Oxygen fuel cells.

UNIT - II

4   What are the silicones? Give preparation, properties and applications of silicones.
OR
5   How the following polymers are prepared: (i) Bakelite. (ii) Polyurethene. (iii) Buna-S. (iv) Buna-N.

UNIT - III

6   A fuel, containing 93% C and 6 H% by mass, was burnt in 90% of air that required for complete combustion.
         Find out the percentage composition of dry products of combustion by mass, if Hydrogen is burnt completely
         and no carbon is left behind.
OR
7   A sample of coal was contain the following constituents: C = 80%: O = 9 %: S = 1% H = 4%: N = 2% ash =
         4%. Calculate the minimum amount of air required for the complete combustion of 1 kg of coal. Also
         calculate the percentage composition by weight of the dry products of combustion. If oxygen in air is 23% by
         weight.

UNIT - IV

8   Discuss the properties of refractory materials
OR
9   Explain the different theories of lubrication process

UNIT - V

10   Describe the demineralization process of softening of hard water and what are the advantages over zeolite
         process.
OR
11   Explain principle and procedure for determination of dissolved oxygen.

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