

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)

- 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) Polyurethane. (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.
