

B.Tech I Year II Semester (R15) Regular Examinations May/June 2016

**ENGINEERING CHEMISTRY**

(Common to CE, EEE and CSE)

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 are the units used for expressing hardness of water?
  - (b) How Calgon treatment prevents scale formation in boilers?
  - (c) Write any two differences of thermosetting and thermoplastics.
  - (d) Why does natural rubber needs compounding?
  - (e) Explain briefly discharging of lead acid battery.
  - (f) What is meant by corrosion inhibitors? Give two examples.
  - (g) Define calorific value. Mention its units.
  - (h) How power alcohol is helpful in fuels?
  - (i) Define refractory. Mention its classification with examples.
  - (j) What are carbon nano-tubes?

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

- 2 Discuss in detail the scale and sludge formation in water boilers. How is it controlled?

**OR**

- 3 What are ion – exchange resins? Discuss their application in water softening. Mention its advantages.

**UNIT – II**

- 4 Explain the preparation, properties and applications of Bakelite and Nylon 6:6.

**OR**

- 5 What are silicones? How are they manufactured? Mention its important uses?

**UNIT – III**

- 6 Define fuel cell. Explain the construction and working of  $H_2 - O_2$  fuel cell. What are the advantages and uses of it?

**OR**

- 7 Discuss various factors influencing the rate of corrosion.

**UNIT – IV**

- 8 Describe the manufacture of metallurgical coke by Otto Hoffman's oven method.

**OR**

- 9 Explain the manufacture of synthetic petrol by Fischer Tropsch and Bergius methods.

**UNIT – V**

- 10 (a) Give the composition of Portland cement.  
(b) Explain the setting and hardening of Portland cement with chemical reactions involved in it.

**OR**

- 11 Explain various lubrication mechanisms.

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