

B.Tech I Year I Semester (R15) Supplementary Examinations June 2016

ENGINEERING CHEMISTRY
(Common to ECE, ME, EIE and IT)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Write any two impurities present in domestic water.
 - Write any two applications of polyacetylene.
 - State pilling-bed worth rule.
 - What is the influence of pH on the rate of corrosion?
 - Define octane number.
 - Write any two disadvantages of power alcohol.
 - What is soundness of cement?
 - Write the principle of lubrication.
 - What is meant by condensation polymerization?
 - Give an example of basic and neutral refractories.

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

UNIT – I

- 2 (a) Explain the desalination of seawater by Reverse osmosis.
(b) Calculate temporary hardness and total hardness of a sample of water containing:
 $\text{Mg}(\text{HCO}_3)_2 = 9.1 \text{ mg/L}$; $\text{Ca}(\text{HCO}_3)_2 = 11.2 \text{ mg/L}$; $\text{MgCl}_2 = 6.5 \text{ mg/L}$; $\text{CaSO}_4 = 10.6 \text{ mg/L}$.

OR

- 3 Discuss briefly the following:
- Break point chlorination.
 - Ion-exchange process.

UNIT – II

- 4 (a) Explain additional polymerization with an example.
(b) Explain the free radical mechanism of additional polymerization.

OR

- 5 (a) Discuss the preparation and uses of Teflon and Bakelite.
(b) Explain briefly about polyphosphazenes and silicones.

UNIT – III

- 6 (a) Derive Nernst equation.
(b) Explain the construction and uses of hydrogen-oxygen fuel cell.

OR

- 7 (a) Discuss in detail about dry corrosion.
(b) Explain in detail about cathodic protection.

UNIT – IV

- 8 (a) Explain about ultimate analysis of coal.
(b) Explain Bergius process for the manufacture of synthetic petrol.

OR

- 9 (a) Explain the manufacture of power alcohol.
(b) How do you determine the calorific value of gaseous fuel by Junker's calorimeter?

UNIT – V

- 10 (a) Explain in detail about manufacture of Portland cement.
(b) Describe briefly about thick film lubrication.

OR

- 11 (a) Explain in detail about setting and hardening of Portland cement.
(b) Write short note on Carbon Nanotubes.
