



B.Tech I Year (R13) Supplementary Examinations December 2019

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)
- Describe briefly about the theories of corrosion.
 - What are the factors, which affect corrosion?
 - What do you mean by co-ordination polymerization? What are the roles of Ziegler-Natta catalysts?
 - Describe the conducting polymers in detail.
 - What are fuel cells used for?
 - What is Fischer Tropsch synthesis?
 - What is meant by flash point?
 - What are the various functions of lubricants?
 - What is boiler corrosion and why it is caused?
 - What is meant by demineralization of water and what types of substances are used for this purpose?

PART – B

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

UNIT – I

- 2 (a) Discuss the mechanism of electrochemical corrosion.
(b) What are the factors on which corrosion depends?

OR

- 3 (a) Explain the analysis of Glucose and urea.
(b) Write a note on nickel-cadmium battery.

UNIT – II

- 4 (a) Explain the addition and condensation polymerization with suitable examples.
(b) Explain the properties and applications of PVC and Nylons.

OR

- 5 (a) What are thermoplastics and thermosetting resins?
(b) What are elastomers? Give the preparation, properties and applications of polysulphide rubbers.

UNIT – III

- 6 (a) Discuss about the Bergius processes with examples.
(b) What is petroleum? Give an account of petroleum refining.

OR

- 7 (a) Explain briefly advantages and disadvantages of power alcohol.
(b) Explain the fuel gas analysis by Orsat's apparatus.

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UNIT – IV

- 8 What are refractories? Explain porosity and strength of refractories.

OR

- 9 (a) A sample of vegetable oil was tested for acid value. 10 gm of oil was titrated against N/40 KOH and burette reading was found to be 2.6ml. State whether the oil is a proper lubricant.
(b) Discuss briefly about hydration and hydrolysis.

UNIT – V

- 10 (a) A pond water sample contains 200 mg of $\text{Ca}(\text{HCO}_3)_2$ per liter. Calculate the hardness of water in terms of CaCO_3 equivalent.
(b) Explain about the ion-exchange process.

OR

- 11 (a) Write about the reverse Osmosis.
(b) Discuss about the estimation of hardness by EDTA method.

