Code: 13A51101 **R13**

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)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Describe briefly about the theories of corrosion.
(b) What are the factors, which affect corrosion?
(c) What do you mean by co-ordination polymerization? What are the roles of Ziegler-Natta catalysts?
(d) Describe the conducting polymers in detail.
(e) What are fuel cells used for?
(f) What is Fischer Tropsch synthesis?
(g) What is meant by flash point?
(h) What are the various functions of lubricants?
(i) What is boiler corrosion and why it is caused?
(j) 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 Ca $(HCO_3)_2$ 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.

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