

B.Tech I Year I Semester (R15) Supplementary Examinations November/December 2019

**ENGINEERING CHEMISTRY**

(Common to ECE, ME, EIE &amp; IT)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- What is meant by hardness of water? What are its units?
  - What is meant by sterilization of water?
  - What is meant by degree of polymerization?
  - What is meant by vulcanization?
  - What is meant by galvanic cell?
  - What is meant by corrosion?
  - What are four important characteristics of metallurgical coke?
  - Define cetane number.
  - What is meant by refractory? Give two examples.
  - Define flash and fire points.

**PART – B**

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

**UNIT – I**

- 2 (a) Describe the estimation of dissolved oxygen by Winkler's method.  
(b) Define scale and sludge. How it will be overcome?

**OR**

- 3 (a) Describe the desalination of Brackish water by electrodialysis.  
(b) A sample of water on analysis gives the following :  
 $\text{MgCl}_2 = 9.5 \text{ ppm}$ ;  $\text{CaSO}_4 = 3.4 \text{ ppm}$ ;  $\text{Mg}(\text{HCO}_3)_2 = 7.3 \text{ ppm}$ ;  $\text{MgSO}_4 = 6.00 \text{ ppm}$ . Calculate temporary and permanent hardness of the sample.

**UNIT – II**

- 4 (a) What is meant by thermo plastic resins? Write preparation, properties and applications of Teflon.  
(b) Write short notes on processing of natural rubber.

**OR**

- 5 (a) What is meant by thermo plastic resins? Write preparation, properties and applications of Bakelite.  
(b) What are conducting polymers? Describe preparation and applications of polyacetylene.

**UNIT – III**

- 6 (a) Explain theory of wet corrosion.  
(b) What are secondary cells? Describe the construction of Ni-Cd cell? Write cell reactions and its applications

**OR**

- 7 (a) Distinguish between wet and dry corrosion.  
(b) Write short notes on fuel cells by taking suitable example.

Contd. in page 2



Code: 15A51101

**UNIT – IV**

- 8 (a) Define calorific value of a fuel. Distinguish gross and net calorific value.  
(b) How do you synthesis petrol by Fischer–Tropsch process?

**OR**

- 9 (a) Describe the proximate analysis of coal.  
(b) How flue gas analysis is conducted by Orsat's apparatus?

**UNIT – V**

- 10 (a) What is pyrometric cone equivalent test? How it is determined for a refractory  
(b) Define lubricant? Discuss the important functions of lubricants

**OR**

- 11 (a) Write short notes on carbon nano tubes.  
(b) Describe thick film lubrication

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