

Reg. No: 

--	--	--	--	--	--	--	--	--

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)**B.Tech I Year I Semester Supplementary Examinations Nov/Dec 2019**

ENGINEERING CHEMISTRY

**(ECE, CSE & CSIT)**

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Discuss about Impressed Current Cathodic protection? **6M**  
b Explain electroplating of Nickel? **6M**

**OR**

- 2 a Explain the construction of Methanol-Oxygen fuel cell. **6M**  
b Explain in detail about Lithium ion batteries? **6M**

**UNIT-II**

- 3 a Calculate temporary, permanent and total hardness of a sample of water containing  $\text{Ca}(\text{HCO}_3)_2 = 40.5 \text{ mg/L}$ ;  $\text{Mg}(\text{HCO}_3)_2 = 46.5 \text{ mg/L}$ ;  $\text{MgSO}_4 = 27.6 \text{ mg/L}$ ;  $\text{CaCl}_2 = 22.4 \text{ mg/L}$ ;  $\text{CaSO}_4 = 32.1 \text{ mg/L}$ . **7M**  
b Explain scale and Sludge formation in boilers. How are they removed? **5M**

**OR**

- 4 a Why do we express hardness of water in terms of  $\text{CaCO}_3$  equivalent? **4M**  
b Describe the Zeolite or permutit process for softening of water. What are the advantages and disadvantages of zeolite process? **8M**

**UNIT-III**

- 5 a Explain the manufacture, advantages and disadvantages of power alcohol. **7M**  
b Define Octane Number and Knocking? **5M**

**OR**

- 6 a Define Lubricants? Discuss the important functions of Lubricants. **5M**  
b What are the advantages and Disadvantages of Liquid fuels and Gaseous fuels? **7M**

**UNIT-IV**

- 7 a Explain the mechanism of Free radical addition polymerization. **6M**  
b Classify addition polymerization and condensation polymerization. **6M**

**OR**

- 8 a What is polymer? Discuss the Preparation, Properties and uses of Teflon. **6M**  
b Explain the procedures used in the processing of natural rubber. **6M**

**UNIT-V**

- 9 a Give an account of Chemical composition of Portland Cement? **6M**  
b Discuss about Super conductors and their applications? **6M**

**OR**

- 10 a Explain in detail about setting and hardening of Portland cement? **6M**  
b Explain thermal spalling, porosity of a refractory. **6M**

\*\*\* END \*\*\*