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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY: PUTTUR**  
(AUTONOMOUS)**B.Tech I Year II Semester Regular & Supplementary Examinations October-2022****ENGINEERING CHEMISTRY**

(Common to CE &amp; AGE)

Time: 3 h

Max. Marks: 60

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

**UNIT-I**

- 1 Describe the demineralization process of water using ion-exchange resins with its advantages and disadvantages. **L2 12M**

**OR**

- 2 a Distinguish between scales and sludges. **L2 6M**  
b List the BIS and WHO specifications for drinking water. **L1 6M**

**UNIT-II**

- 3 a Derive the Nernst equation for a single electrode potential and write its applications. **L3 10M**  
b Define standard electrode potential. **L1 2M**

**OR**

- 4 a Explain the construction and working of lead acid battery. **L2 6M**  
b Discuss the electrochemical corrosion with suitable example. **L2 6M**

**UNIT-III**

- 5 a Describe the preparation, properties and uses of Bakelite and PVC. **L2 8M**  
b Differentiate thermoplastics and thermosetting plastics. **L2 4M**

**OR**

- 6 Explain the proximate and ultimate analysis of coal with their significance. **L2 12M**

**UNIT-IV**

- 7 Discuss the mechanism of different types of lubrication. **L2 12M**

**OR**

- 8 a What are composites? Write a note on fiber reinforced composite materials. **L1 6M**  
b Explain the setting and hardening processes of portland cement. **L2 6M**

**UNIT-V**

- 9 Explain the principle, instrumentation and applications of scanning electron microscopy. **L2 12M**

**OR**

- 10 a Describe the applications of nanomaterials. **L2 6M**  
b What are the factors influencing adsorption of gases on solids? **L1 6M**

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