



# MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

I B.Tech I Sem Supply End Examination, November 2020

## CHEMISTRY (EEE, CSE, IT)

**Time: 2 Hours.**

**Max. Marks: 70**

Note: 1. Answer any FIVE questions.

2. Each question carries 14 marks and may have a, b as sub questions.

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|---|---|-----|
| 1 | a) Discuss about LCAO theory. With the help of diagram explain Pi molecular orbitals of butadiene.                                      | 7M  |
|   | b) Give the salient features of crystal field theory. What is the effect of doping on conductance? Explain.                             | 7M  |
| 2 | Discuss about crystal field splitting of transition metal "d " orbitals in tetrahedral and square planar geometries.                    | 14M |
| 3 | a) How do you estimate hardness of water by EDTA complexometry.   | 7M  |
|   | b) Give the specifications for potable water. Write the steps involved in potable water.  | 7M  |
| 4 | Differentiate primary and secondary batteries. Describe the construction, working and uses of Lithium ion battery.                      | 14M |
| 5 | a) Why ion-exchange process is superior over other methods of softening of water?   | 7M  |
|   | b) What is electrochemical series? Write its applications.  | 7M  |
| 6 | What is nucleophilic substitution reaction? Write the mechanism and stereochemistry of S <sub>N</sub> 1 and S <sub>N</sub> 2 reactions. | 14M |
| 7 | a) How do you synthesise aspirin. Give the pharmaceutical applications of aspirin and paracetamol.                                      | 7M  |
|   | b) Define chemical shift. What is its significance? Write about MRI.  | 7M  |
| 8 | Why do you study spectroscopy? Illustrate selection rules and applications of UV spectroscopy in quantitative analysis.                 | 14M |