



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 II Sem Supplementary Examination, December-2021

CHEMISTRY (CE, ME, ECE)

Time: 3 Hours.

Max. Marks: 70

Note: 1. Question paper consists: Part-A and Part-B.

2. In Part - A, answer all questions which carries 20 marks.

3. In Part - B, answer any one question from each unit.

Each question carries 10 marks and may have a, b as sub questions.

PART- A

(10*2 Marks = 20 Marks)

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|-------|---|----|-----|-----|
| 1. a) | What is LCAO method? | 2M | C01 | BL1 |
| b) | Explain concept of band structure of solids. | 2M | C01 | BL4 |
| c) | What is hardness of water? What are species caused for it? | 2M | C02 | BL1 |
| d) | Describe the principle of disinfection of water by chlorination? | 2M | C02 | BL2 |
| e) | How can you compare primary and secondary batteries? | 2M | C03 | BL2 |
| f) | What is meant by pitting corrosion? | 2M | C03 | BL1 |
| g) | What is Saytzeff Rule? Give one example. | 2M | C04 | BL1 |
| h) | How would you describe the principle of oxidation of alcohols using chromic acid? | 2M | C04 | BL2 |
| i) | What is the principle of spectroscopy? | 2M | C05 | BL1 |
| j) | Define chemical shift. | 2M | C05 | BL1 |

PART- B

(10*5 Marks = 50 Marks)

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|------|--|----|-----|-----|
| 2 a) | Draw the molecular orbital energy level diagram for O ₂ molecule. | 5M | C01 | BL4 |
| b) | How would you explain Crystal field splitting of d-orbitals in tetrahedral geometry? | 5M | C01 | BL2 |

OR

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|------|---|-----|-----|-----|
| 3 | State your own words regarding π molecular orbital diagrams of benzene. | 10M | C01 | BL2 |
| 4 a) | How would you summarise the treatment of boiler feed water by phosphate conditioning? | 5M | C02 | BL2 |
| b) | Describe principle of external treatment of water by ion exchange method. | 5M | C02 | BL2 |

OR

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|---|--|-----|-----|-----|
| 5 | How would you estimate the permanent hardness of water by complexometric method? | 10M | C02 | BL2 |
|---|--|-----|-----|-----|

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|-----------|----|---|-----|-----|-----|
| 6 | a) | How would you determine the pH of solution by using glass membrane electrode? | 5M | C03 | BL2 |
| | b) | Discuss the principle of Lithium ion battery. | 5M | C03 | BL2 |
| OR | | | | | |
| 7 | | How would you describe factors affecting rate of corrosion? | 10M | C03 | BL2 |
| OR | | | | | |
| 8 | a) | State your own words on enantiomers and diastereomers. | 5M | C04 | BL4 |
| | b) | How would you explain synthesis and pharmaceutical applications of Aspirin? | 5M | C04 | BL2 |
| OR | | | | | |
| 9 | | How would you explain the electrophilic and nucleophilic addition reactions ? | 10M | C04 | BL2 |
| OR | | | | | |
| 10 | a) | How would you summarize selection rules regarding rotation spectroscopy? | 5M | C05 | BL2 |
| | b) | How would you explain principle of nuclear magnetic resonance spectroscopy? | 5M | C05 | BL2 |
| OR | | | | | |
| 11 | | How would you describe the selection rules and applications of electronic spectroscopy? | 10M | C05 | BL2 |

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