



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, April 2022

Chemistry (EEE, CSE, IT)

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) | Define LCAO (Linear combination of Atomic orbital) | 2M | C01 | BL1 |
| b) | Explain the effect of doping on conductance. | 2M | C01 | BL1 |
| c) | Calculate the hardness of a sample of water having the following composition $\text{Ca}(\text{HCO}_3)_2=243$ mg/litre, $\text{MgSO}_4=240$ mg/litre, mol.wt 162 and 120 respectively. | 2M | C02 | BL2 |
| d) | Illustrate the characteristics of potable water. | 2M | C02 | BL1 |
| e) | Define the terms Single electrode potential and Standard electrode potential. | 2M | C03 | BL2 |
| f) | What is galvanic and pitting corrosion? | 2M | C03 | BL1 |
| g) | Explain Enantiomers and Diastereomers with an example each. | 2M | C04 | BL2 |
| h) | Predict the products
1. $\text{CH}_3\text{-CH=CH}_2\text{-----HBr--}\rightarrow$
2. $\text{CH}_3\text{-CH=CH}_2\text{ -----HBr/R-O-O-R----}\rightarrow$ | 2M | C04 | BL1 |
| i) | Write the selection rules of Vibrational rotational spectra. | 2M | C05 | BL1 |
| j) | What causes a chemical shift in NMR Spectroscopy? | 2M | C05 | BL1 |

PART- B

(10*5 Marks = 50 Marks)

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|----|--|-----|-----|-----|
| 2 | Explain in detail Molecular orbital energy level diagram of N_2 molecule. | 10M | C01 | BL4 |
| OR | | | | |
| 3 | Explain the π molecular orbital of benzene. | 10M | C01 | BL4 |
| 4 | Describe briefly the desalination of water by Reverse Osmosis method. | 10M | C02 | BL4 |
| OR | | | | |
| 5 | Discuss briefly the softening of hard water by Ion exchange process. | 10M | C02 | BL2 |

- 6 What is Cathodic protection? Explain briefly about sacrificial anodic method. 10M C03 BL2
- OR**
- 7 Discuss the various factors affecting rate of corrosion. 10M C03 BL2
- 8 Explain the mechanism of SN¹ and SN² reaction with suitable examples. 10M C04 BL6
- OR**
- 9 Write the structure, synthesis and pharmaceutical applications of paracetomal 10M C04 BL2
- 10 Write the selection rules & applications of Vibrational rotational spectra in detail. 10M C05 BL6
- OR**
- 11 Explain about MRI (Magnetic Resonance Imaging) 10M C05 BL2

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