

Final: 10.12.2021

Course Code: 2010008

Roll No:

MLRS-R20



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, December 2021

ENGINEERING CHEMISTRY

(EEE, CSE, CSM, CSI & INF)

Time: 3 Hours.

Max. Marks: 70

Note: 1. Answer any FIVE questions.

2. Each question carries 7 marks.

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|---|----|---|----|------|----|
| 1 | a) | Explain the π - molecular orbital diagram of 1,3-butadiene. | 7M | CO1 | L2 |
| | b) | What are the salient features of crystal field splitting theory. | 7M | CO 1 | L1 |
| 2 | a) | Explain the postulates of Molecular Orbital Theory. | 7M | CO1 | L1 |
| | b) | Write the crystal field splitting of d-orbitals in tetrahedral and square planar complexes. | 7M | CO1 | L2 |
| 3 | a) | A sample of water contains following impurities: $Mg(HCO_3)_2 = 84$ mg/L, $MgCl_2 = 76$ mg/L, $CaCO_3 = 30$ mg/L, $SiO_2 = 1.36$ mg/L calculate temporary, permanent and total hardness of water. | 7M | CO2 | L2 |
| | b) | What is Causticem brittlemet? Explain How to control it. | 7M | CO2 | L3 |
| 4 | a) | What are reference electrodes? Describe construction of calomel electrode. | 7M | CO3 | L2 |
| | b) | What is Electrochemical corrosion? Explain its mechanism. | 7M | CO3 | L1 |
| 5 | a) | Discuss the principle of EDTA complexometric method for determination of hardness of water. | 7M | CO2 | L2 |
| | b) | Explain the construction and working of lead-acid battery. | 7M | CO3 | L2 |
| 6 | a) | Write sawhorse, Fischer and Newman projections of 1-bromo butan-2-ol. | 7M | CO4 | L3 |
| | b) | Describe Markownikoff and anti Markownikoff's rule with suitable example. | 7M | CO4 | L2 |
| 7 | a) | What is conformational isomerism? Discuss conformational analysis of n-butane. | 7M | CO4 | L1 |
| | b) | What type of electronic transitions can occur when molecule absorb energy in UV- visible region? | 7M | CO5 | L2 |
| 8 | a) | Describe the principle of NMR spectroscopy. | 7M | CO5 | L1 |
| | b) | What are the applications of IR spectroscopy? | 7M | CO5 | L2 |

