

Course Code: 2020008

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 II Sem Regular End Examination, September 2021

Engineering Chemistry
(CIV, CSC, CSD, ECE, MECH)

Time: 3 Hours.

Max. Marks: 70

Note: 1. Answer any FIVE questions.

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

- | | | | | | |
|---|----|---|----|-----|-----|
| 1 | a) | Give an account on LCAO. Give its significance. | 7M | CO1 | BL1 |
| | b) | Draw the energy level diagram of oxygen molecule. Give its bond order and magnetic property. | 7M | CO1 | BL1 |
| 2 | a) | Discuss about the splitting of octahedral geometry in CFT. | 7M | CO1 | BL2 |
| | b) | How do you classify materials as conductors, semi conductors and insulators? What is the effect of doping on conductance? | 7M | CO1 | BL1 |
| 3 | a) | How temporary and permanent hardness is caused to water? Mention the methods for the removal of hardness. Give the units in which hardness is expressed. How are various units of hardness related? | 7M | CO2 | BL1 |
| | b) | Describe ion- exchange process of water softening. How are the exhausted resins regenerated? | 7M | CO2 | BL2 |
| 4 | a) | How do you estimate hardness of water by EDTA complexometry. | 7M | CO2 | BL1 |
| | b) | How do you construct glass electrode, write the cell reaction involved. | 7M | CO3 | BL1 |
| 5 | a) | What is an electrochemical series? Write the applications of the series. | 7M | CO3 | BL1 |
| | b) | Discuss about cathodic protection methods of corrosion control. | 7M | CO3 | BL2 |
| 6 | a) | Differentiate enantiomers and diastereomers? | 7M | CO4 | BL2 |
| | b) | Name the rule applicable in the addition of HBr to propene? | 7M | CO4 | BL1 |
| 7 | a) | Differentiate SN1 and SN2 reactions with suitable examples. Mention about their stereo chemistry. | 7M | CO4 | BL2 |
| | b) | Write about the selection rules applicable to UV spectroscopy. | 7M | CO5 | BL1 |
| 8 | a) | How IR spectroscopy applied in the identification of >C=O. NH ₂ , -OH, -COOH groups. | 7M | CO5 | BL1 |
| | b) | Define and explain chemical shift, and MRI. | 7M | CO5 | BL4 |