



# 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

II B.Tech II Sem Supply End Examination, March 2022

## Basic Electrical & Electronics Engineering (CIVIL & 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) | Write the V-I relationship of (i) Resistance (ii) inductance and (iii) capacitance   | 7M | CO1 | BL1 |
|   | b) | Define and explain (i) Active power (ii) reactive power and (iii) apparent power   | 7M | CO1 | BL1 |
| 2 | a) | A single phase R-L-C series circuit of $R = 10 \text{ Ohms}$ ; $L = 20 \text{ mH}$ and $C = 100 \mu\text{F}$ is connected across 220 V, 50 Hz supply. Find (i) Impedance (ii) current (iii) power factor of the circuit. | 7M | CO1 | BL3 |
|   | b) | Derive the relationship between line and phase quantities of 3-phase star connected system.  | 7M | CO1 | BL6 |
| 3 | a) | Explain the working of MCCB with a neat sketch.  | 7M | CO2 | BL4 |
|   | b) | Explain various types of cables used in electrical installations.  | 7M | CO2 | BL4 |
| 4 | a) | What are the characteristics of a fully charged battery?   | 7M | CO2 | BL1 |
|   | b) | Derive the e.m.f equation of a d.c generator.  | 7M | CO3 | BL6 |
| 5 | a) | The maximum flux density in the core of a 250/3000 V, 50Hz single phase transformer is $1.2 \text{ Wb/m}^2$ . If the e.m.f per turn is 8V, determine (i) primary and secondary turns and (ii) area of the core           | 7M | CO3 | BL3 |
|   | b) | Explain the working principle of 3-phase Induction motor.  | 7M | CO3 | BL4 |
| 6 | a) | Qualitatively explain the forward and reverse characteristics of a PN junction diode.  | 7M | CO4 | BL4 |
|   | b) | Explain the working of Full wave bridge rectifier with a neat circuit diagram.   | 7M | CO4 | BL4 |
| 7 | a) | Draw the characteristics of Zener diode.   | 7M | CO4 | BL1 |
|   | b) | Explain the working principle of a NPN Transistor  | 7M | CO5 | BL4 |
| 8 | a) | Draw the circuit diagram of CB transistor configuration.   | 7M | CO5 | BL1 |
|   | b) | Compare BJT with FET in any four aspects.  | 7M | CO5 | BL2 |