



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 I Sem Supplementary Examination, July-2022

Electromagnetic Fields

(EEE)

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.

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| 1 | a) State Coulomb's law of force between any two point charges, and indicate the units of the quantities in the force equation. | 7M | C01 | BL3 |
| | b) Define and explain the following: (1) absolute electric potential (ii) potential difference. | 7M | C01 | BL1 |
| 2 | Explain coulombs Law. Three equal positive charges of 2×10^{-9} coulomb each are located at three corners of a square of side 20 cm. Determine the electric field intensity at the vacant corner point of the square | 14M | C01 | BL3 |
| 3 | a) Show that the energy stored in a capacitor is proportional to its capacitance and square of the voltage across it. | 7M | C02 | BL3 |
| | b) Derive Laplace and Poisson equation. | 7M | C02 | BL5 |
| 4 | a) State and explain Biot-Savart's law. | 7M | C03 | BL4 |
| | b) Obtain an expression for MFI due to a straight conductor carrying a current. | 7M | C03 | BL5 |
| 5 | a) Obtain the solution of Laplace equation. | 7M | C02 | BL3 |
| | b) A wire carrying a current of 100A is bent into a square form, 10 cm sides. Calculate the field at the centre of the coil. | 7M | C03 | BL3 |
| 6 | Obtain the Maxwell's equations in differential and integral forms | 7M | C04 | BL3 |
| 7 | a) State and explain faradays laws of electromagnetic induction. | 7M | C04 | BL4 |
| | b) Explain the wave propagation in good conductors. | 7M | C05 | BL4 |
| 8 | Discuss the wave propagation in lossy dielectrics with relevant mathematical expressions. | 14M | C05 | BL2 |