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 Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Regular End Examination, March 2021
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.

1	a)	State and explain Gauss law. List the applications of Gauss law.	7M	CO	BL
	b)	What is electric dipole? Derive the expression for the E at a point P due to an electric dipole.	7M	CO	BL
2	a)	State coulombs Law. Derive its vector form.	7M	CO	BL
	b)	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.	7M	CO	BL
3	a)	i) What is difference between a conductor and dielectric? ii) A parallel plate capacitor composed of tin oil sheet 25 cm x 25 cm on glass as dielectric 6.25 m thick with $\varepsilon_r = 6$. Find the capacitance.	7M	CO	BL
	b)	Obtain the ohm's law in point form.	7M	CO	BL
4	a)	State and explain Biot-Savart's law.	7M	CO	BL
	b)	Obtain an expression of a force developed in a current carrying element placed in a magnetic field.	7M	CO	BL
5	a)	Obtain the boundary conditions of the interface between two different dielectric materials.	7M	CO	BL
	b)	The core of a toroid is 12 cm² and is made of material with $\mu_r = 250$. If the mean radius of the toroid is 50 cm. Calculate the number of turns needed to obtain an inductance of 2.3 H.	7M	CO	BL
6	a)	Obtain the Maxwell's equations in differential forms.	7M	CO	BL
	b)	Obtain the Maxwell's equations in integral forms.	7M	CO	BL
7	a)	What is displacement current? Give its significance.	7M	CO	BL
	b)	Explain the wave propagation in good conductors.	7M	CO	BL
8		Derive the wave equation for a uniform plane wave travelling in a conducting medium.	14M	CO	BL

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