R22 Regulation *Subject code: 4E3BE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, July 2024

ELECTRO MAGNETIC FIELD

(EEE)

Maximum Marks: 60 Date:27.07.2024 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		CO	Bloom Tx
1.a)	Define Scalar.	1	L1
b)	State Divergence theorem.	1	L1
c)	Write the electric field intensity formula for a line charge?	2	L1
d)	Write the Gauss law.	2	L1
e)	Define current density.	3	L1
f)	Write the ohm's law in point form?	3	L1
g)	Define magnetic dipole moment.	4	L1
h)	Define magnetization.	4	L1
i)	Write the point of maxwell's equation?	5	L1
j)	What is propagation in good conductor?	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
2	Determine the dot product, cross product and angle between (10M) $\mathbf{P}= 2\mathbf{a}_x-6\mathbf{a}_y+5\mathbf{a}_z$ $\mathbf{Q}= 3\mathbf{a}_y+\mathbf{a}_z$	1	L2
	OR		
3	Explain the following in detail with necessary equations. [10M] a. Rectangular coordinates b. Cylindrical coordinates c. Spherical coordinates	1	L2
4	Derive the electrical potential equations for a point, line and sheet of charge? [10M]	2	L2
	OR		

5	Explain in detail following laws a) Coulomb's law [5M] b) Gauss law and its applications. [5M]	2	L2
6	Derive the boundary conditions for a dielectric interface. [10M]	3	L2
	OR		
7	Explain the following laws in detail a) Biot-savart law [5M] b) Ampere law [5M]	3	L2
8	Derive force expressions on a) a moving charge [5M] b) differential current element [5M]	4	L2
	OR		
9	What are the different classifications of materials? [10M]	4	L2
10	Define displacement current and also write the point form and integral form of maxwell's equation. [10M]	5	L2
	OR		
11	Explain a) Skin effect [5M] b) Poynting Theorem [5M]	5	L2