Sub Code: R2021025 **R20** **Set No. 1**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY- GURAJADA VIZIANAGARAM
II B. Tech I Semester Supplementary Examinations, November – 2024
ELECTRO MAGNETIC FIELDS
(EEE)

Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
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Unit - I

1	a)	State and explain Coulomb's law and its vector form.	[7]
	b)	State Gauss's Law. Derive its integral and differential forms	[7]
		(OR)	
2	a)	Explain Maxwells first law in electric field	[7]
	b)	Write about Laplace and poison's equations	[7]
		Unit - II	
3	a)	Explain the conductors and insulators in electric field	[7]
	b)	Define polarization? explain the boundary conditions between conductors to dialectic materials	[7]
		(OR)	
4	a)	Discuss energy storage in a capacitor with a dielectric material. Derive the expression for the energy density.	[7]
	b)	Derive an expression for energy density in static electric fields	[7]
		Unit - III	
5	a)	Explain Biot savart's law and its application in solenoid current carrying wire	[7]
	b)	Derive maxwell's second equation	[7]
		(OR)	
6	a)	Derive the Ampere's Circuital Law and discuss its application	[7]
	b)	Derive an expression for two straight long current carrying conductors	[7]
		Unit - IV	
7	a)	Derive the expressions for self-inductances of a solenoid	[7]
	b)	Derive the expressions for self-inductances of a toroid	[7]
		(OR)	
8	a)	Derive the expressions for mutual inductances between a straight long wire	[7]
	b)	Derive the expressions for mutual inductances between a square loop wire	[7]
		Unit - V	
9	a)	State and explain faradays laws of electromagnetic induction	[7]
	b)	Explain statically and dynamically induced emf in detail	[7]
		(OR)	
10	a)	Explain the modification of maxwell's equations for time varying fields	[7]
	b)	Define Poynting theorem and Poynting vector in detail	[7]

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