PRN:		Course Code:	ECE305R1

Third Year **B. Tech** End Semester Examination Winter 2023

Electromagnetic Field Theory

Day and Date: Monday, 04/12/2023 Max Marks: **100**

Time: 10.30 am to 1.30 PM Duration: **03** hrs

Instructions: 1. All questions are compulsory.
2. Smith chart is allowed in examination hall.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	Write point and differential lengths, surfaces and volume in three coordinate system.	08	2	1
	b)	State and explain Coulomb's law in detail.	08	2	2
		OR			
	b)	Write a note on Divergence and Curl.	08	1	3
Q.2		**Attempt the following**			
	a)	Derive equation for electric field intensity due to infinite line charge placed along Z-axis.	08	3	2
	b)	Derive equation for potential (V) and intensity (E) due to electric dipole?	08	3	3
		OR			
	b)	State and explain Divergence theorem in detail.	08	2	1
Q.3		**Attempt any two from the following**			
	a)	Derive equation for dielectric-dielectric boundary condition.	08	1	2
	b)	Write a note on nature of dielectrics.	08	1	3
	c)	Explain method of images.	08	2	1
Q.4		**Attempt any two from the following**			
	a)	Write a note on vector magnetic potential.	08	1	1
	b)	State and explain Ampere's law.	08	2	3
	c)	Explain stroke's theorem.	08	2	4
Q.5		**Attempt any Two of the following**			
	a)	Derive maxwell's equations for time dependent fields?	09	3	4
	b)	Derive wave equation for free space.	09	4	2
	c)	State and explain Poynting theorem.	09	3	1
Q.6		**Attempt any Two of the following**			
	a)	Write difference between circuit theory and field theory.	09	3	1
	b)	Derive transmission line equation for voltage and current wave.	09	2	4
	c)	A 30m long Tx line with characteristics impedance 50ohm operating at 2MHz is terminated with 60+j40 ohm. if u = 0.6c on the line find reflection coefficient, SWR and input impedance.	09	4	3

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