Q.P. Code: 16EC409

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Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations Dec 2019

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	State the Gauss's Law.Apply Gauss's law to evaluate Electric Flux Density D for a Uniformly charged Sphere.		**8M**
	b	State Coulomb's law and write the equation of **F** that exists between two unlike Charges.		**4M**
		OR		
2	a	Derive the Continuity Equation and Relaxation time for Electrostatic Fields.		**7M**
	b	Define Capacitance. Write about Different types of Capacitors and give the expression for Capacitance.		**5M**

UNIT-II

3	a	What is the Magnetic field Intensity Due to a Straight current carrying filamentary conductor of finite length?		**6M**
	b	State Ampere's Circuit Law.		**6M**
		OR		
4	a	Explain about the Any one application of Ampere's Circuit law.		**6M**
	b	Explain about Poisson's Equation of Magneto-statics.		**6M**

UNIT-III

5	a	Write down the Maxwell's Equations in their integral form. Derive the Corresponding Equations for fields varying harmonically with time.		**7M**
	b	Derive the Expressions for Displacement Current.		**5M**
		OR		
6	a	Show that $\nabla \times E = J + j\omega\varepsilon E$.		**7M**
	b	Define the Following Terms (i)Inductance (ii) Mutual Inductance (iii)Generator e.m.f (iv)Magnetic Vector Potential		**5M**

UNIT-IV

7	a	Calculate the reflection coefficient for vertical polarization with oblique incident on perfect dielectric.		**7M**
	b	Define the following (i)Reflection efficient (ii)Poynting Theorem (iii) Transmission Coefficient (iv)Snell's Law (v) Surface Impedance		**5M**
		OR		
8	a	Define the Conducting Medium and Obtain the Expression for Intrinsic impedance.		**6M**
	b	Ensure the Transmission for Perfect Conductor with Normal incidence.		**6M**

UNIT-V

9	a	What is the Characteristic Impedance? Obtain the Relation between Characteristic Impedance and the Propagation Constant.	7M
	b	An air line has a Characteristic Impedance of 70 Ωand phase Constant of 3 rad/m at 100MHz.Calculate R,C,and L.	5M
		OR	
10	a	A telephone line has R=30 Ω /km, L=100 mH/km, G=0 and C=20 μF/km, At f=1 KHz obtain Z0,γ and Phase Velocity (u).	7M
	b	Define Transmission line and Explain the Primary Constants.	5M

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