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Code	No: 135AP						
TANKAHADI AI NEHRII TECHNOLOGICAL UNIVERSII I III DERUM							
A(G)	B. Tech III Year I Semester Examinations, December - 2019 B. Tech III Year I Semester Examinations, December - 2019 ELECTROMAGNETIC THEORY AND TRANSMISSION LINES (Common to ECE, ETM) Max. Mar	AG	A				
Note:	This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. consists of 5 Units. Answer any one full question from each unit. Each question	Part B carries					
AG	10 marks and may have a, b as sub questions.	AG Marks)	A				
1.a) b) c) d) e) f) g)	State Coloumb's Law. What is Electric Potential? Give relation between E and V. State Faraday's Law of electromagnetic induction. What is a dielectric material? What are its applications? Define Uniform Plane waves. State Poynting Theorem. Define Characteristic Impedance.	[2] [3] [2] [3] [2] [3] [2] [3]	A				
	What are the different types of Transmission lines? What are primary and secondary constants of Transmission line? Explain about reflection coefficient. PART B (50)	[2] [3] Amarks)	A				
2.a) b)	Explain in detail about Electric Potential. Two point charges -4 μ C and 5 μ C are located at (2,-1, 3) and (0, 4, -2) respectively. Determine the potential at (1, 0, 1) assuming zero potential at infinity. OR Prove that Electric field intensity E is the negative gradient of V. Formulate the Continuity of Current equation.	[5+5] [5+5]	A				
4. AG.	In a certain conducting region H=yz($x^2 + y^2$) $a_x - y^2xza_y + 4x^2y^2a_z$ A/m a) Determine J at (5, 2, -3) b) Determine current passing through x=-1, 0 <y, <math="" c)="" prove="" that="" z<2="">\nabla.B=0. Explain the following boundary conditions with necessary equations: a) Dielectric-dielectric Interface</y,>	[4+3+3]	A				
	b) Dielectric-conductor Interface.						

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a) Perfect Conductor			MARIA IM INJERADA	5+5]					
Describe the following in		AG	AG	ÅG	A				
c) Surface Impedance.			nchina de la companya	- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10					
A transmission line ope Determine the line param Formulate the condition	orating at 500MHz has neters R, L, G and C. for Distortionless and r	Z_o =80 Ω, α=0.	04Np/m, β=1.5 ration transmission.	ad/m. [5+5]	A				
OR 9.a) Explain the different types of loading in transmission lines. Explain the different types of loading in transmission lines. $7.760 \text{ O}_{10} \text{ g} = 20 \text{ mNp/m}_{10} \text{ u} = 0.6 \text{ c}_{10} \text{ where } \text{ c} = 3 \times 10^8 \text{ m/sec}_{10}$.									
Determine P I G Can	d λ at f=100MHz.			L 3	Λ				
	n line.	AG	AU		<i>/</i> ─\				
$Z_o = 50 \Omega$ operating at 2 MHz is terminated									
i) Reflection coefficient ii) Standing Wave Ratio	3 AG	AG	AG	<u>A</u> G	A				
b) Explain in detail the applications of Simula Chart.									
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•	a) Perfect Conductor b) Perfect Dielectric. Describe the following in a) Brewster Angle b) Critical angle and Totace Surface Impedance. A transmission line oper Determine the line parameter formulate the condition Explain the different type A distortionless line in Determine R, L, G, C an Formulate expressions for a) Lossy Transmission in b) Lossless Transmission in b) Lossless Transmission in Standing Wave Ration iii) Standing Wave Ration iii) Input Impedance Explain in detail the appropriate in Standing Wave Ration iii) Input Impedance in Standing Wave Ration iiii) Input Impedance in Standing Wave Ration iiii) Input Impedance in Standing Wave Ration iiii) Input Impedance in Standing Wave Ration iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	a) Perfect Conductor b) Perfect Dielectric. Describe the following in detail a) Brewster Angle b) Critical angle and Total Internal Reflection c) Surface Impedance. A transmission line operating at 500MHz has Determine the line parameters R, L, G and C. Formulate the condition for Distortionless and r OR Explain the different types of loading in transm A distortionless line has $Z_o=60 \ \Omega$, $\alpha=20$ m Determine R, L, G, C and λ at $f=100$ MHz. Formulate expressions for input impedance of: a) Lossy Transmission line b) Lossless Transmission line. OR A 30m long lossless Transmission line with Z_o by a load of $Z_L=60$ +j40 Ω . If $u=0.6c$ on the line i) Reflection coefficient ii) Standing Wave Ratio— iii) Input Impedance Explain in detail the applications of Smith Chamber 1 and 1	Describe the following in detail a) Brewster Angle b) Critical angle and Total Internal Reflection c) Surface Impedance. A transmission line operating at 500MHz has Z _o =80 Ω, α=0. Determine the line parameters R, L, G and C. Formulate the condition for Distortionless and minimum attenuation of the different types of loading in transmission lines. A distortionless line has Z _o =60 Ω, α=20mNp/m, u=0.6c, Determine R, L, G, C and λ at f=100MHz. Formulate expressions for input impedance of: a) Lossy Transmission line b) Lossless Transmission line. OR A 30m long lossless Transmission line with Z _o =50 Ω operating by a load of Z _L =60 +j40 Ω. If u=0.6c on the line, Determine i) Reflection coefficient in Standing Wave Ratio iii) Input Impedance Explain in detail the applications of Smith Chart.	a) Perfect Conductor b) Perfect Dielectric. Describe the following in detail a) Brewster Angle b) Critical angle and Total Internal Reflection c) Surface Impedance. A transmission line operating at 500MHz has Z _o =80 Ω, α=0.04Np/m, β=1.5 r Determine the line parameters R, L/A G and C. Formulate the condition for Distortionless and minimum attenuation transmission. OR Explain the different types of loading in transmission lines. A distortionless line has Z _o =60 Ω, α=20mNp/m, u=0.6c, where c=3×10 ⁸ r Determine R, L, G, C and λ at f=100MHz. Formulate expressions for input impedance of: a) Lossy Transmission line b) Lossless Transmission line. OR A 30m long lossless Transmission line with Z _o =50 Ω operating at 2 MHz is term by a load of Z _b =60+j40 Ω. If u=0.6c on the line, Determine i).Reflection coefficient ii) Standing Wave Ratio iii) Input Impedance Explain in detail the applications of Smith Chart.	a) Perfect Conductor b) Perfect Dielectric. Describe the following in detail a) Brewster Angle b) Critical angle and Total Internal Reflection c) Surface Impedance. A transmission line operating at 500MHz has $Z_o=80 \ \Omega$, $\alpha=0.04 \text{Np/m}$, $\beta=1.5 \ \text{rad/m}$. Determine the line parameters R, L, G and C. Formulate the condition for Distortionless and minimum attenuation transmission. OR Explain the different types of loading in transmission lines. A distortionless line has $Z_o=60 \ \Omega$, $\alpha=20 \text{mNp/m}$, $u=0.6 \text{c}$, where $c=3\times10^8 \text{m/sec}$. Determine R, L, G, C and λ at $f=100 \text{MHz}$. Formulate expressions for input impedance of: a) Lossy Transmission line b) Lossless Transmission line OR A 30m long lossless Transmission line with $Z_o=50 \ \Omega$ operating at 2 MHz is terminated by a load of $Z_L=60 + j40 \ \Omega$. If $u=0.6 \text{c}$ on the line, Determine i) Standing Wave Ratio ii) Standing Wave Ratio				