

ANURAG Engineering College

(An Autonomous Institution)

II B.Tech II Semester Supplementary Examinations, December – 2024

ELECTROMAGNETIC FIELDS AND TRANSMISSION LINES**(ELECTRONICS & COMMUNICATION ENGINEERING)****Time: 3 Hours****Max. Marks: 60****Section – A (Short Answer type questions)****(10 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. State Gauss's law in electrostatics.	CO1	L1	1M
2. Give the relation between E and V?	CO1	L1	1M
3. Define Magnetic flux density?	CO2	L1	1M
4. Write the expression for Lorentz force equation.	CO2	L2	1M
5. State Faraday's law.	CO3	L1	1M
6. Give the expressions for any two Maxwell's equations.	CO3	L2	1M
7. Define skin depth.	CO4	L1	1M
8. Define Surface impedance?	CO4	L1	1M
9. What are lumped and distributed parameters?	CO5	L1	1M
10. List the applications of smith chart.	CO5	L1	1M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Explain the following applications of Gauss's law. i) Point charge ii) Infinite line charge	CO1	L2	10M
OR			
B) Derive continuity equation and relaxation time from fundamentals.	CO1	L3	10M
12. A) Explain the following applications of Ampere's circuit law. i) Infinite line current ii) Infinite sheet of current	CO2	L2	10M
OR			
B) Explain about ampere's force law with derivation?	CO2	L3	10M
13. A) State and prove the Maxwell's equations for electrostatic fields.	CO3	L3	10M
OR			
B) Given $E = 10\sin(\omega t - \beta z)a_y$ V/m in free space, determine D, B, H .	CO3	L3	10M
14. A) Derive the expressions for reflection coefficient and transmission coefficient when the wave is incident normally on dielectric.	CO4	L3	10M
OR			
B) Explain about wave propagation in lossless and conducting medium?	CO4	L2	10M
15. A) Compare the relation between different propagation parameters for different types of transmission lines?	CO5	L2	10M
OR			
B) A transmission line in which no distortion is present has the following parameters: $Z_0 = 50 \Omega$, $\alpha = 0.020 \text{ m}^{-1}$, Velocity = $0.6V_0$. Determine R, L, G, C and wavelength at 0.1GHZ.	CO5	L3	10M