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BT-4 / M-18

ELECTROMAGNETIC THEORY

Paper–ECE–206 N

Time allowed : 3 hours] *[Maximum marks : 75*

Note :- *Attempt any **five** questions by selecting at least **one** from each unit.*

Unit- I

1. What do you understand by boundary conditions? Explain with suitable Expressions boundary conditions for electric field. 15

2. (a) State and explain the Gauss's law. Explain the applications of Gauss's law with Example.

(b) Write short note on Uniqueness Theorem. 15

Unit- II

3. (a) Find the magnetic flux density at a point due to current flowing in a conductor.

(b) Find the magnetic flux density at a point on the axis of a circular loop of radius 'b' that carries direct current I. 15

4. (a) Starting with Ampere's law, derive Maxwell's equation in integral form. Obtain the corresponding relation by applying the Stoke's theorem.

(b) Derive the Maxwell's equations from Faraday's law of electromagnetic induction. 15

Unit- III

5. Derive the wave equations from the Maxwell's equations for conducting medium. Also find the expression of attenuation and phase shift constant of wave propagating in conducting medium. 15

6. Find the expression of Energy in electromagnetic wave in terms of Electric field and Magnetic field. 15

Unit- IV

7. (a) Explain the reflection coefficient and voltage standing wave ratio of a transmission line.

   (b) Write short note on Graphical Methods of Transmission line Analysis. 15

8. Write short note on :

   (a) Cut-off & Guided Wavelength in waveguide.

   (b) Wave Impedance and Characteristic Impedance 15