Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (EE/EEE) (Sem.–5)

ELECTROMAGNETIC FIELD THEORY

Subject Code : EE-303

Paper ID : [A0414]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

(a) Express the unit vector which is directed from the point (x, y, –4) to the origin.

(b) State all the conditions for which A×B=0.

(c) Define Electric scalar potential.

(d) How is divergence of electric flux density defined?

(e) How is the direction of a magnetic field around a conductor determined?

(f) How is magnetic flux density varied if the electric current in a coil is doubled?

(g) Discuss the concept of displacement current.

(h) What is modified form of Ampere's law?

(i) Show that a uniform plane wave passing in any direction does not have any component at that direction.

(j) Define Poynting vector. What is the SI unit for-this vector?

SECTION-B

2. Define curl of a vector field. Prove that ∇×(A×B

3. Derive an expression for electric field at a point infinite plane.

4. State and prove the boundary conditions for displa

5. Discuss the use of direction cosines.

6. List the properties of uniform plane wave.

SECTION-C

7. (a) Justify that the net Electric field within a cond

(b) Derive the equation of continuity for time vary

8. (a) State the Green's theorem. What is its physica

(b) Discuss the analogy between electric and mag

9. Give a mathematical representation of plane +Z direction in an infinite loss less dielectric m medium is characterized by propagation constant