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

Total No. of Questions : 09

B.Tech. (EE) (PT) (Sem.–2)

ELECTROMAGNETIC FIELDS

Subject Code : BTEE-403

Paper ID : [A2627]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select atleast TWO questions from SECTION - B & C.
5. Make use of neat diagrams to explain.

SECTION-A

1. Write briefly :

a. State Green's theorem.

b. Write down Lorentz force equation.

c. State inconsistency of Ampere's law.

d. What do you mean by Magnetization?

e. State divergence theorem.

f. What do you understand by polarization of uniform plane wave?

g. Define magnetic dipole.

h. Define Uniqueness theorem.

i. What do you understand from current continuity equation?

j. What is meant by skin effect? Mention its significance.

SECTION-B

2. Derive the expression for the inductance of solenoid.

3. Derive the boundary conditions at an interface between two magnetic medias.

4. Derive the expression for electrostatic energy density.

5. Calculate the self-inductance and the mutual inductances between two coaxial solenoid R1 and R2, R2>R1, carrying currents I1 and I2 with n1 and n2 turns respectively.

SECTION-C

6. Explain the concept of Poynting vector and Poynting theorem.

7. Derive modified form of Ampere's circuital law in integral and differential form.

8. Explain what happens when the wave is incident

   a. Normally on perfect conductor.

   b. Obliquely to the surface of perfect dielectrics.

9. Explain and derive the Maxwell's equation in differential and integral form.