Exam.Code:0935
Sub. Code: 6984

1079

B.E. (Electrical and Electronics Engineering)
Fifth Semester
EE-508: Electromagnetic Fields Theory

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

a) Give practical examples for diverging and curling fields.

b) Draw the equipotential lines and electric field lines for a parallel plate capacitor.

c) Write Laplace equation and its applications.

d) Define Poynting vector.

e) State the magnetic boundary conditions. (5x2)

UNIT –I

II. a) Discuss about the electric field intensity due to a sheet of charge.

b) Derive the Stoke's theorem and give any one application of the theorem in electromagnetic fields. (2x5)

III. a) Calculate the capacitance of a parallel plate capacitor having an electrode area of 100 cm^2. The distance between the electrodes is 4mm and its dielectric used has a permittivity of 3.5. The applied potential is 100 volts.

b) Derive the Laplace equation. Obtain the Laplacian's operator in the cylindrical coordinate system. (4,6)

IV. a) Derive the Poisson's equation.
b) Define divergence theorem and prove the same. (2x5)

UNIT – II

V. a) Derive H due to a circular current loop and extend the same to compare H due to a long solenoid.

b) State and explain Ampere's circuital law and mention its some simple applications. (6,4)

P.T.O.

VI. a) Derive Maxwell's equation from Faraday's law and Ampere's law in integral form, differential form and vector form.

b) Define displacement current. (8,2)

VII. a) Define Biot-Savart law.

b) Differentiate between electric and magnetic circuits.

c) Derive the expression for inductance of a solenoid. (3,3,4)

x-x-x