B.Tech. (EE) 4th Semester F-Scheme

Examination, May-2019

ELECTRO MAGNETIC THEORY

Paper-EE-208-F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : ***Question No. 1 is compulsory.*** *Attempt any* ***one*** *question from each section.*

1. (a) What is Biot - Savart's Law ? 5

   (b) What is Poisson's and Laplace Equation ? 5

   (c) Explain Faraday's Law ? 5

   (d) Derive the relation between VSWR and Reflection Coefficient. 5

Section-A

2. (a) State and prove Stock's Theorem. 10

   (b) Differentiate between irrotational field and solenoidal field. 10

3. (a) State and prove Gauss divergence theorem. 15

   (b) Give the physical interpretation of the curl of a vector. 5

Section-B

4. Explain electrostatic boundary conditions into all three components. 20

5. (a) State and explain Coulomb's Law. 10

   (b) What is relaxation time and derive the expression ? 10

Section-C

6. (a) Derive the expression for Magnetic scalar and vector potential. 10

   (b) What are Magnetic forces ? Derive the equation for magnetic forces due to magnetic field. 10

7. Derive and explain Ampere's Circuital Law with its applications. 20

Section-D

8. Explain all Maxwell's equation in differential as well as in integral form with their physical interpretation. 20

9. (a) Derive the expression for wave equation in lossless dielectric. 10

   (b) Derive the expression for basic transmission line equation. 10