EE 3005

III Semester B.Tech. In Electrical Engineering Examination, August 2011
ELECTROMAGNETIC THEORY

Time : 3 Hours Max. Marks : 75

Instructions : *1) Answer **any five** questions from Part **A** and answer **any five** questions from Part **B**.*

*2) **Each** question carries 5 **(five)** marks in Part **A** and 10 **(ten)** marks in Part **B**.*

PART – A

Answer **any five** only : **(5×5=25)**

1. Define curl and divergence theorem.
2. Derive the equation for Ampere's law current element.
3. Explain Lorentz force equation.
4. Derive the equation for parallel plate capacitor.
5. Derive the boundary conditions for electric fields.
6. Derive the equation for energy stored inductor.
7. Derive the differential form of Maxwell's equation.
8. Explain pointing vector and pointing theorem.

PART – B

Answer **any five** only : **(5×10=50)**

9. i) State and explain Coulomb's law of force.

   ii) Two equally charged spheres repel each other with a force equal to a weight of 1 09 milligrams. If their centres are 20 cm apart, find the charge on each.

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10. State and explain Gauss Law.

11. i) State and explain magnetic field intensity.

ii) A wire carrying a current of 100 A is bent into a square form, 10 cm sides. Calculate the field at the centre of the coil.

12. State and explain Biot-Savorat Law.

13. State and explain Poission equations.

14. State and explain Maxwell's equations.

15. State and explain wave equation for conducting medium.

16. Derive the transmission line equations.