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B.E. (Full-Time)DEGREE END SEMESTER EXAMINATIONS, April/May 2013

ELECTRICAL AND ELECTRONICS ENGINEERING

THIRD SEMESTER

EE9202 ELECTROMAGNETIC THEORY

(REGULATION 2008)

Time : 3 hr

Max. Marks : 100

Answer ALL Questions

PART-A (10x2=20 marks)

1. Differentiate non-ionizing and ionizing emf with suitable examples.
2. State and derive the Stroke's theorem.
3. Equal point charges are located at all four corners of a square. What is E at the centre of the square?
4. What is the electric field intensity inside and outside a metallic conductor?
5. Plot H field in and around a circular conductor.
6. State Ampere's circuital Law
7. Mention the limitations of circuit theory.
8. Explain how a material changes its behavior with frequency.
9. Derive for Poynting vector in free space, in general
10. Explain Skin Effect in conductors.

PART -B (5x16=80 marks)

11. What are the different ways of electromagnetic induction, explain with practical examples, derive the corresponding governing equation (both in integral and differential forms).
- 12.a. State Gauss' Law. Calculate the E in around two infinitely large parallel plate when they are charged equally with same polarity.

(OR)
- 12.b. Explain Dielectric polarization .
- 13.a. Derive the magnetostatic boundary conditions at the interface of two different magnetic media.

(OR)
- 13.b. Derive the force between two parallel conductors carrying current in the same direction and in opposite direction.
- 14.a. Derive the Maxwell's equations from the fundamental laws. Explain the need for displacement current.

(OR)
- 14.b. Explain in detail the working principle of a DC generator. Also explain when maximum and minimum voltage will be induced.
- 15.a. Derive the electromagnetic wave equations in free space . Mention the types of solutions.

(OR)
- 15.b. Derive the transmission and reflection coefficients for the wave traveling through two different media.