**B.Sc. DEGREE EXAMINATION, NOVEMBER 2015**

**III YEAR — V SEMESTER**

**Major Paper IX — ELECTROMAGNETISM**

**Time : 3 hours Max. Marks : 60**

**SECTION A — (10 × 1 = 10 marks)**

**Answer any *TEN* questions**

1. Define peak value of *AC*.
2. What is resonant frequency?
3. Define Hentry.
4. State the importance of coefficient of coupling.
5. Write the value of motional *emf* of a conductor.
6. Give the principle of *AC* induction motor.
7. Define efficiency of a generator.
8. How the flux leakage loss in dynamo is minimized?
9. Define displacement current.
10. Calculate the velocity of electromagnetic waves in free space.
11. Give the significance of Poynting vector.
12. Define wattles current.

 **SECTION B — (5 × 4 = 20 marks)**

 **Answer any *FIVE* questions**

1. Derive the expression for *RMS* value of *AC* current.
2. Explain the working of choke coil.
3. Describe the determination of self-inductance by Raleigh’s method.
4. Discuss the applications of Eddy current.
5. Calculate the equivalent inductance when inductors are connected in parallel.
6. Explain the action of series wound and shunt wound motors.
7. Derive the Maxwell’s equation *∆ X H = J + ∂D/∂t.*

**SECTION C — (3 × 10 = 30 marks)**

**Answer any *THREE* questions**

1. Derive the expression for impedance and frequency of a series resonant circuit.
2. Describe the experimental determination of mutual inductance.
3. (a) Derive the expression for self –inductance of a coaxial cylinder. (5 marks)

(b) Explain rotating magnetic field. (5 marks)

1. Discuss the theory and working of three phase *AC* generator.
2. Derive the plane electromagnetic wave equations in free space.

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