Con. 5845-13   **LJ-10651**

(3 Hours)   [Total Marks : 100

N.B. : (1) **Question** No. **1** is **compulsory**.
   (2) Attempt any **four** from remainig **six** questions.
   (3) **Figures** to the right **indicate** full marks.
   (4) Use suitable data whenever required.

1. (a) State and prove Gauss Law.   5
   (b) What do you mean by method of images ?   5
   (c) Explain polarization for electromagnetic wave.   5
   (d) Define and explain vector Magnetic Potential.   5

2. (a) Find out capacitance of spherical capacitor form by two concentric sphere of radius   10
       'a' and 'b' where a < b.
   (b) Derive the expression for electric field intensity due to intinite surface charge.   10

3. (a) Circular loop conductor carrying current of 1 Amp. is placed in X-Y plane centered   10
       at origin. Find expression for magnetic field intensity at any point on Z-axis.

   (b) Four like charges of 40 μ c each are placed at four corners of a square. The square   10
       diagonal is 12 meters. Find force on 200 μ c charge located 5 meters above the
       center of a square.

4. (a) Define Poynting Vector and explain each term in its integal form.   10
   (b) Write Ditterential form of Maxwell equation and explain the same.   10

5. (a) Derive the wave equation for uniform plane wave in free space.   10
   (b) Derive Laplace and Poisson's Equation.   10

6. (a) State and explain Uniqueness Theorem.   10
   (b) State and explain Stroke's Theorem and Biot-Servert's Law.   10

7. (a) Derive Boundary conditions for Electrostatic and Magneto statics.   10
   (b) Describe Reflection of Uniform Plane Wave.   10

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