Unit -5 Question Bank

1. State Biot-Savart law of electromagnetism with its mathematical expression.

2. Explain Ampere's law of electromagnetism.

3. Explain Lorentz force equation of electromagnetism. What is its significance?

4. Define magnetic field intensity, magnetic flux density and magnetic susceptibility. Write the mathematical relationship between them explaining each symbol.

5. Write short notes on different types of magnetic materials.

6. Distinguish between Soft and hard magnetic materials.

Numerical Problems

1. The magnetic field strength in silicon is 1000 A/m. If the magnetic susceptibility is $- 0.3 \times 10^{-5}$. Calculate the magnetization and flux density in silicon.   [- 0.003 A/m, 1.25x10^{-3} T]

2. The magnetic field strength in a material is 10^6 A/m. If the magnetic susceptibility of the material at room temperature is 1.5×10^{-3}, calculate the magnetization and flux density in the material.   [1.5x10^3 A/m, 1.259 T]

3. A magnetic material has a magnetization of 3200 A/m and flux density of 0.0045 Wb/m^2. Determine the magnetic field and the relative permeability of the material. [380 A/m, 9.42]