

SYLLABUS :-

Introduction: origin of magnetism, history of magnetism and magnetic materials;
Classification of magnetic materials: paramagnetism, diamagnetism, ferromagnetism, antiferromagnetism, ferrimagnetism; Magnetic properties: hysteresis and related phenomena, barkhausen effect and related phenomena, magnetoresistance, magnetostriction; Magnetic domains and magnetization processes: concept of magnetic domains, properties of magnetic domain walls, magnetization curve and domain structure, reversible magnetization process, irreversible magnetization process, dynamic properties of magnetization; Magnetic anisotropy: magnetocrystalline anisotropy, shape anisotropy, stress anisotropy, exchange anisotropy, induced anisotropy; Engineering applications of magnetic materials; Nanomagnetism.