

FIRST SEM QUESTION BANK

Electrical Maintenance

PAPER – II

Chapter 01: Magnetism and Electromagnetism

1. Define the magnetic terms with units. i) Magnetic poles ii) Magnetic lines of force iii) Magnetic circuit iv) Magnetic field v) Magnetic flux vi) Magnetic axis vii) Magnetic neutral axis.
2. What is the difference between ferromagnetic magnetic, paramagnetic and diamagnetic substances.
3. What is electromagnetism? State the advantages and applications of electromagnets.
4. Define the terms with their units; i) m.m.f ii) Reluctance iii) Permeance.
5. State Faraday's laws of electromagnetic induction.
6. State and explain Lenz's law with neat diagrams.
7. Compare magnetic circuit with electric circuit.

Chapter 02 : D.C. Generator.

1. What is a D.C. generator? What are the essential requirements for producing electricity? Explain.
2. On which principle does a D.C. generator works? Explain.
3. Draw a neat cross-sectional view of the D.C. generator and state the function of each part.
4. What are the types of armature windings? Distinguish them.
5. State the E.M.F equation of a D.C.generator.
6. A four pole, lap wound armature has 14 slots, 50 conductors per pole and a flux of 15mWb per pole. Find the e.m.f induced in the armature when running at a speed of 1200 r.p.m.
7. An eight pole, lap wound armature has 800 conductors and a flux of 15mWb per pole. Find the e.m.f induced in the armature when running at a speed of 500 r.p.m.
8. A four pole, wave wound armature has 500 conductors per pole and a flux of 0.02 Wb per pole. Find the e.m.f induced in the armature when running at a speed of 800 r.p.m.
9. Classify the D.C.generators. Draw the circuit diagram of each and explain their functions.

Chapter 03 : D.C. Motor

1. What is a D.C. motor? On what principle does it work? Explain.
2. What is meant by ' back e.m.f ' ? What is its relation to the applied voltage?
3. What are the different types of D.C. motors? Draw their connection diagram. State their applications.
4. A 230V shunt motor takes a total current of 15A. If the resistance of the armature is 0.4Ω and that of shunt field is 200Ω . Find: i) shunt field current, ii) armature current, iii) back e.m.f.
5. A 250V shunt motor takes a total current of 25A. If the resistance of the armature is 0.2Ω and that of shunt field is 200Ω . Find: i) shunt field current, ii) armature current, iii) back e.m.f.
6. Why starter is necessary for starting D.C. motor? Name different types of starters.
7. A 250V shunt motor takes a total current of 25A. If the resistance of the armature is 0.2Ω and that of shunt field is 200Ω . Find i) shunt field current ii) armature current iii) back e.m.f.
8. Draw a neat and labelled diagram of 3-point starter.

Chapter 04 : Single Phase AC Circuits

1. Define the terms; i) Alternating current ii) Cycle iii) Frequency iv) Impedance v) Power factor. State their units.
2. The maximum value of an alternating induced e.m.f is 450V. Find its instantaneous value at 30° , 180° , 270° and 330°
3. The coil has the inductance of 0.1 H. Find its inductive reactance. What current will it draw if connected to 250V, 50Hz A.C.supply?
4. Calculate the current that will flow through a coil of 0.05H inductance, when connected to a 220V, 50Hz A.C.supply.
5. A capacitor has a capacitance of $100\mu\text{F}$. Find its capacitive reactance. If the capacitor is connected across 250V, 50Hz A.C.supply, what current will it take?
6. A coil of resistance 10Ω and inductance of 0.05H is connected in series across a 230V, 50Hz A.C.supply Find i) impedance ii) current iii) power factor iv) power of the circuit.
7. A coil of resistance 14Ω and inductance of 0.28H is connected in series across a 270V, 50Hz A.C.supply Find i) impedance ii) current iii) power factor iv) power of the circuit.
8. A coil of resistance 10Ω and inductive reactance 25Ω connected in series with a capacitor of capacitive reactance 5Ω across 250V, 50Hz A.C.supply Find i) impedance ii) current iii) power factor iv) power of the circuit.
9. A coil of resistance 20Ω and inductive reactance 10Ω connected in series with a capacitor of capacitive reactance 4Ω across 250V, 50Hz A.C.supply Find i) impedance ii) current iii) power factor iv) power of the circuit.
10. A coil of resistance 10Ω and inductive reactance 25Ω connected in series with a capacitor of capacitive reactance 5Ω across 250V, 50Hz A.C.supply Find i) impedance ii) current iii) power factor iv) power of the circuit.