Reg. No. | | | | | | | | | | | | |

Question Paper Code : 57316

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Fourth Semester

Electrical and Electronics Engineering

EE6401 – ELECTRICAL MACHINES – I

(Regulations 2013)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. State Ampere's Law.
2. Define Leakage Flux.
3. Define all day efficiency of a transformer.
4. What is Inrush current in a transformer ?
5. Define Co-energy.
6. What is meant by winding inductance ?
7. Compare Lap and Wave windings.
8. Draw various characteristics of D.C. shunt generator.
9. Draw speed-torque characteristics of DC series motor.
10. What is meant by Plugging ?

PART – B (5 × 16 = 80 Marks)

11. (a) Summarize the properties of magnetic materials. (16)

OR

(b) Explain the Hysteresis and eddy current losses and obtain its expression. (16)

12. (a) With a circuit explain how to obtain equivalent circuit by conducting O.C & S.C test in a single phase transformer. (16)

OR

(b) Explain the various three phase transformer connection and parallel operation of three phase transformer. (16)

13. (a) Obtain the expression for energy in a attracted armature relay magnetic system. (16)

OR

(b) With an example explain the Multiple-excited magnetic field system. (16)

14. (a) Explain the Armature Reaction in D.C machine. (16)

OR

(b) (i) Obtain EMF equation of D.C. generator. (8)

(ii) A 4-pole dc motor is lap-wound with 400 conductors. The pole-shoe is 20cm long and the average flux density over one-pole-pitch is 0.4T, the armature diameter being 30 cm. find the torque and gross-mechanical power developed when the motor is Drawing 25A and running at 1500 rpm. (8)

15. (a) The no-load test of a 44.76 kW, 220-V, D.C. shunt motor gave the following figures :

Input current = 13.25 A; Field current = 2.55 A; Resistance of the armature at 75°C = 0.032Ω and Brush drop = 2V. Estimate the full-load current and efficiency. (16)

OR

(b) Explain the method to obtain efficiency at full load by conducting Hopkinson's test. (16)