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

Question Paper Code: 57316

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

Fourth Semester

Electrical and Electronics Engineering

EE 6401- ELECTRICAL MACHINES-I

(Regulation 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 wave and Lap windings.

8. Draw various characteristics of D.C generator

9. Draw speed-torque characteristics of D.C 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) Discuss in brief about the OC and SC test of a single phase transformer. Develop an approximate equivalent circuit for a single phase transformer **(16)**

(Or)

b) Explain the various three phase transformer connections and parallel operation of three phase transformer **(16)**

13. a) Obtain the expression for energy in a attracted armature relay magnetic systems. **(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 20 cm long and the average flux density over one-pole-pitch is 0.4 T, the armature diameter being 30 cm. find the torque and gross-mechanical power developed when the motor is drawing 25 A 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= 13.25A, field current = 2.55 A, resistance of the armature at 75^0C=0.032Ω and brush drop = 2 V. 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)**