



EE 3004

**III Semester B.Tech. in Electrical Engineering Examination, August 2011**

**ELECTRICAL MACHINES – I**

Time : 3 Hours Max. Marks : 75

**Instructions:** 1) Answer any five questions from Part – A, and answer any five questions from Part – B.

2) Each question carries 5 (five) marks in Part – A and 10 (ten) marks in Part – B.

**PART – A**

I. Answer any five only :

(5×5=25)

- 1) State Faraday's law and Lenz's law.
- 2) Derive the equation for self inductance.
- 3) What are the properties of ideal transformer?
- 4) Why the transformers are rated in KVA? Explain.
- 5) What are the conditions for build up voltage in self excited generator?
- 6) Why need for starter? Draw the diagram for 3 point starter.
- 7) Draw the speed torque curve for DC series Motor. Explain.
- 8) What are common defects in commutator?

**PART – B**

I. Answer any five only :

(5×10=50)

- 9) Write simple analysis of magnetic circuit.
- 10) Explain the working principle of single phase transformer.

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- 11) A single phase transformer has 1000 turns on primary and 500 secondary turns. The net cross sectional area of the core is  $0.006 \text{ m}^2$ . If the primary winding is connected to a 50 Hz supply at 400 volts. Calculate the
- Maximum value of flux density
  - The voltage induced in the secondary winding.
- 12) Explain the characteristics of self excited DC generator.
- 13) Explain with neat diagram, construction and working principle of DC Motor.
- 14) Derive the Torque equation of DC Motor.
- 15) Explain the type of Maintenance.
- 16) How to conduct in Swinburne's test in DC Machine ?

PART - B

(2 x 10 = 20)

- Answer any five only :
- Write simple analysis of magnetic circuit.
- Explain the working principle of single phase transformer.

P.T.O.