Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 80373

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fourth Semester

Electrical and Electronics Engineering

EE 6401 — ELECTRICAL MACHINES – I

(Regulations 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Hysteresis Losses?

2. Define Flux Linkage.

3. Define Voltage Regulation of a transformer.

4. Draw Scott connection of a transformer.

5. What is Magnetic saturation?

6. What is meant by distributed winding?

7. Write EMF equation of D.C generator.

8. What is the use of Interpole in D.C machine?

9. List various method of starting D.C motor.

10. What is meant by dynamic braking in D.C motor?

PART B — (5 × 16 = 80 marks)

11. (a) Obtain the expression for Dynamically induced EMF and force.   (16)

Or

(b) Explain the AC operation of Magnetic circuit.   (16)

12. (a) The following data were obtained on a 20 kVA, 50 Hz, 2000/200 V distribution transformer:

	Voltage (V)	Current (A)	Power (W)
OC test with HV open-circuited	200	4	120
SC test with LV short-circuited	60	10	300

Draw the approximate equivalent circuit of the transformer referred to the HV and LV sides respectively. (16)

Or

(b) With circuit explain Sumpner's test and how to obtain efficiency of a transformer. (16)

13. (a) Obtain the expression for field energy and mechanical force. (16)

Or

(b) Explain about the Magnetic field in rotating machines. (16)

14. (a) Explain the construction and operation of D.C generator. (16)

Or

(b) Describe the process of commutation in D.C machine. (16)

15. (a) In a Hopkinson's test on a pair of 500-V. 100-kW shunt generators, the following data was obtained:

Auxiliary supply, 30 A at 500 V: Generator output current, 200 A Field currents, 3.5 A 1.8 A

Armature circuit resistances, 0.075 Ω each machine. Voltage drop at brushes, 2 V (each machine).

Calculate the efficiency of the machine acting as a generator. (16)

Or

(b) With a circuit, explain how to obtain efficiency of D.C Generator by conducting Swinburne's test. (16)

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