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

(Regulation 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 the 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 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 statically and dynamically induced emf.   **(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 **(16)**

	Voltage (V)	Current (I)	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 side

(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 generators. **(16)**

(Or)

b) Describe the process of commutation in D.C machines. **(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, 30A at 500 V: Generator o/p current, 200A field currents, 3.5A, 1.8A Armature circuit resistance, 0.075 Ω each machine. Voltage drop at brushes, 2 V each

Calculate the efficiency of the machine e 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)**