Code: 15A02302 **R15**

B.Tech II Year I Semester (R15) Regular & Supplementary Examinations November/December 2018

ELECTRICAL MACHINES – I

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) State the principle of electro mechanical energy conversion.
(b) Give example for single and multiple excited systems.
(c) What are the conditions to be full filled for a DC shunt generator to build up EMF?
(d) Define the term critical speed in DC shunt generator.
(e) Why the starters are used for DC motors?
(f) Why DC shunt motor is also called constant speed motor?
(g) How hysteresis and eddy current losses are minimized?
(h) Name any 2 non-loading method of testing in DC machine.
(i) What is prime mover in DC generators?
(j) State basic principles of DC generator.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain energy balance and energy force in a singly excited magnetic field system.

OR

3 Describe multi excited magnetic field systems.

UNIT – II

4 Explain the lap and wave windings with a neat sketch.

OR

5 Describe methods of improving commutation of a generator.

UNIT – III

6 Discuss the parallel operation of DC series generators.

OR

7 What are the uses of equalizer bar and cross connection of field windings?

UNIT – IV

8 Explain the characteristics and applications of shunt and series motors.

OR

9 Derive the calculation of starter steps for DC shunt motors.

UNIT – V

10 Give a short notes on:

(a) Brake test.
(b) Swinburne test.

OR

11 Explain constant and variable losses in DC machines.

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