Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 51211

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Fifth Semester

Electrical and Electronics Engineering

080280039 — ELECTRICAL MACHINES – II

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Define distribution factor (k_d).

2.   What is synchronizing power in an alternator?

3.   What are V-curves and inverted V-curves?

4.   Write the expression for the power developed by the synchronous motor?

5.   What is squirrel cage rotor?

6.   What is crawling?

7.   What are the types of starters used for three phase induction motor?

8.   Write the speed control methods for three phase induction motor.

9.   Why is single phase induction motor not self-starting?

10. What is universal motor?

PART B — (5 × 16 = 80 marks)

11. (a) The following test results are obtained on a 6,600 V alternator :

Open circuit voltage : 3100 4900 6600 7500 8300

Field current (A) : 16 25 37.5 50 70

The field current of 20 A is found necessary to circulate full load current on short circuit of the armature. The full load regulation at 0.8 p.f(lag). Calculate by

(i) The ampere turn method

(ii) The synchronous impedance method.

Neglect resistance and leakage resistance- State the drawback of each of these methods.

Or

(b) Write the conditions to be satisfied for synchronization of alternator and explain the methods for synchronizing three phase alternator.

12. (a) Explain the principle of operation and starting methods of synchronous motor.

Or

(b) Explain Hunting and write down the applications of Synchronous motor.

13. (a) Design the equivalent circuit of three phase induction motor.

Or

(b) A three phase, 400 V, induction motor gave the following test readings:

No load: 400 V, 1250 W, 9 A

Short-circuit: 150 V. 4 KW, 38 A

Draw the circle diagram. If the normal rating is 14.9 KW, find from the circle diagram, the full load value of current, pf and slip.

14. (a) What are the types of starters for three phase induction motor and explain about rotor resistance starter and star- delta starter with neat diagram wherever necessary.

Or

(b) Explain the methods of speed control of three phase induction motor from rotor side.

15. (a) Write the principle of single phase induction motor and also explain double-field revolving theory.

Or

(b) Explain the working principle of hysteresis motor and write its applications.

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