Reg. No. : | | | | | | | | | | |

Question Paper Code: 41342

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Fourth Semester

Electrical and Electronics Engineering

14UEE402 - AC MACHINES

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The power factor of a Squirrel Cage Induction motor is

   (a) Low at light loads only (b) Low at heavy loads only
   (c) Low at light and heavy loads (d) Low at rated load only

2. Which of the following quantity in Squirrel Cage Induction motor does not depend on its slip?

   (a) Reactance (b) Speed (c) Induced emf (d) frequency

3. An Induction motor has a I_{SC} current 7 times the I_{FL} and Full load slip of 4%. Its starting torque is _____ times the full load torque.

   (a) 7 (b) 1.96 (c) 4 (d) 49

4. When a Stationary 3 phase Induction Motor is switched on with one phase disconnected

   (a) It will burn out (b) Start slowly
   (c) Make a jerky start with loud noise (d) Fuses will blow out

5. A 50 Hz alternator will run at greatest possible speed if it is wound for _____ poles.

   (a) 8 (b) 6 (c) 4 (d) 2

6. At lagging loads, armature reaction in an alternator is

(a) Cross magnetizing (b) de magnetizing
(c) non effective (d) magnetizing

7. A damper winding is provided in a Synchronous motor for

(a) Stabilizing rotor motion (b) Suppress rotor oscillation
(c) Develop necessary Starting Torque (d) Both (b) and (c)

8. In a Synchronous motor, the magnitude of Stator back emf depends on

(a) Speed (b) Load
(c) Both speed and load (d) DC excitation

9. One of the characteristics of single phase Induction Motor is

(a) Self-Starting (b) Not Self-Starting
(c) Requires one winding only (d) Can rotate in one direction only

10. Usually large motors are more efficient than small ones. The efficiency of tiny motor used in a wrist watch is approximately _____ %

(a) 1 (b) 10 (c) 50 (d) 80

PART - B (5 x 2 = 10 Marks)

11. What is meant by plugging?

12. Give reasons for a three phase motor failing to start.

13. What are the methods for determining voltage regulation of an alternator?

14. Name the torques of a synchronous motor.

15. What is universal motor?

PART - C (5 x 16 = 80 Marks)

16. (a) Write the step by step procedure for determination of equivalent circuit of three phase induction motor. (16)

Or

(b) Explain the procedure to derive the various performance characteristics using circle diagram for a three phase induction motor. (16)

17. (a) Explain the working of any three starters employed for three phase induction motor. (16)

Or

(b) Describe the speed control of induction motor (any three methods). (16)

18. (a) Write the procedure for finding voltage regulation of alternator using synchronous impedance method. (16)

Or

(b) Explain the construction (any two types) and working principle of alternator. (16)

19. (a) Derive the torque equation of synchronous motor. (16)

Or

(b) (i) Define Hunting. (6)

(ii) Methods of starting synchronous motor. (10)

20. (a) Prove that single phase induction motor is not self starting. (16)

Or

(b) With neat diagram explain the working of any four types of single phase induction motor. (16)

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