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

Question Paper Code: 51337

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

Third Semester

Mechanical Engineering

15UEE323 - ELECTRICAL MACHINES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The function of commutator in a DC generator is_____.

   (a) to improve commutation (b) to change AC voltage into DC voltage
   (c) to provide speed control (d) none of the above

2. The armature core of a DC motor is laminated_____.

   (a) to reduce eddy current loss (b) to reduce hysteresis loss
   (c) to reduce mass of the armature (d) both (a) and (b)

3. The transformer core is generally made of_____

   (a) aluminium (b) copper (c) sillicon steel (d) cast iron

4. A transformer can have zero regulation at_____.

   (a) zero p.f. (b) unity p.f. (c) lagging p.f. (d) leading p.f.

5. Three phase induction motor is also called as _____ motor.

   (a) synchronous (b) asynchronous (c) linear (d) none of these

6. _____ is a disadvantage of squirrel cage induction motor when compared to slip ring induction motor.

(a) low starting torque (b) the rotor has bar conductors
(c) no brushes (d) all the above

7. Alternator works on the principle of _____.

(a) mutual induction (b) self induction
(c) faraday's law of electromagnetic induction (d) both (a) and (b)

8. Hunting in synchronous motor takes place when _____.

(a) friction in bearing is small (b) air gap is small
(c) load is constant (d) load is variable

9. Rotating magnetic field in Shaded pole motor is produced by using _____.

(a) salient poles (b) shading coils
(c) a capacitor (d) a high reluctance winding

10. Universal motors are used on_____.

(a) both AC and DC (b) AC only (c) DC only (d) none of these

PART - B (5 x 2 = 10 Marks)

11. What are the two effects of amature reation in a DC Generator?

12. Why the efficiency of transformer is more than that of other rotating machines?

13. Define synchronus speed in a three phase induction motor.

14. What are the functions of damping winding provided with alternator?

15. Mention the applications of stepper motor.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about the construction of DC generator with a neat sketch. (16)

Or

(b) Analyze the various performance characteristics of DC shunt, series and compound motor. (16)

17. (a) Draw and explain the phasor diagrams of transformer for various load conditions. (16)

Or

(b) With neat circuit diagrams, explain the open circuit and short circuit tests conducted on single phase transformer. (16)

18. (a) Sketch and discuss the Torque-Slip characteristics of 3-phase induction motor. (16)

Or

(b) Develop the equivalent circuit of an induction motor. Represent the approximate model and state its significance. (16)

19. (a) Explain the working principle of 3-phase alternator and derive the e.m.f. equation of an alternator. (16)

Or

(b) Discuss the various starting methods of synchronous motor with suitable diagrams. (16)

20. (a) Explain with neat suitable diagrams the working principle of split-phase and capacitor-start capacitor run induction motor. (16)

Or

(b) Write a brief note on

(i) Universal motor (8)

(ii) Hysteresis motor (8)