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

Question Paper Code: 54030

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fourth Semester

Electronics and Communication Engineering

15UEE426 - PRINCIPLES OF ELECTRICAL MACHINES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The armature of a D.C machine is laminated in order to reduce

   (a) Eddy current loss (b) Hysteresis loss
   (c) Copper loss (d) Friction loss

2. Motor starters are essential for

   (a) Accelerating the motor (b) Starting the motor
   (c) Avoiding excessive stating current (d) Preventing fuse blowing

3. A transformer will work on

   (a) A.C only (b) D.C only (c) A.C as well as D.C (d) None of these

4. Which of the following connection of transformer will give the highest secondary voltage

   (a) Delta primary, Delta secondary (b) Star primary, star secondary
   (c) Delta primary, star secondary (d) star primary, delta second

5. The stator of a 3-phase induction motor produces _____ magnetic field.

   (a) Steady (b) Rotating (c) Alternating (d) None of these

6. If a 4-pole induction motor has a synchronous speed of 1500 r.p.m., then, supply frequency is

(a) 50 Hz (b) 25 Hz (c) 60 Hz (d) None of these

7. Damper winging are used in alternators to

(a) Prevent hunting (b) Reduce windage losses
(c) Achieve synchronism (d) None of these

8. An over exited synchronous motor behaves as

(a) a resistor (b) an inductor (c) a capacitor (d) None of these

9. The best suited motor to drive ¾ h.p. air compressor would be _____ motor.

(a) Capacitor-start (b) Single-phase series
(c) Shaded-pole (d) Resistance split-phase

10. The type of single-phase induction motor having the highest power factor at full-load is

(a) Shaded-pole type (b) Split-phase type
(c) Capacitor-start, capacitor-run (d) Capacitor-start type

PART - B (5 x 2 = 10 Marks)

11. Why commutator is employed in DC machines?

12. Define voltage regulation of transformer.

13. What is slip of an induction motor?

14. What do you mean by hunding of a synchronous motor?

15. List the methods employed employed to make a sigle phase induction motor self starting?

PART - C (5 x 16 = 80 Marks)

16. (a) Mention the significance of starter and explain three point starter with neat diagram. (16)

Or

(b) (i) Derive the e.m.f equation of the DC generator. (8)

(ii) Discuss the open circuit and load characteristics of DC shunt generator. (8)

17. (a) Derive the e.m.f equation of the transformer. (16)

Or

(b) Deduce the equivalent circuit of transformer starting from the basic. (16)

18. (a) Explain the construction and operating principle of a three phase induction motor. (16)

Or

(b) (i) Why starters are necessary for starting 3 Phases induction motors? Also list the various types of starters. (8)

(ii) Explain star-delta type starter in detail. (8)

19. (a) Derive the generalized expression for an induced e.m.f equation per phase in three phase alternator. (16)

Or

(b) Write short notes on starting methods of synchronous method. (16)

20. (a) Why single phase induction motor is not self starting and what the different types of single phase induction motor. Explain the operation of capacitor start capacitor run single phase induction motor. (16)

Or

(b) What is stepper motor and explain the construction, working principle of any one type of stepper motor also mention its application. (16)

54030