A

Reg. No. :

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The speed of permanent magnet dc motor cannot be controlled   CO1- R
    by_____

    (a) Flux control method   (b) electronic circuits

    (c) rheostatic control method   (d) none of these

2. When the load – torque is increased, the rotor speed tends to ------   CO1 -R

    (a) constant   (b)zero   (c) fall   (d) increased

3. The attractive force that exists in an object or substance after it has   CO2- R
    been removed from a magnetic field is called

    (a) Residual magnetism   (b) Residual current

    (c) armature reaction   (d) demagnetizing

4. The breakdown torque of a synchronous motor varies   CO2- R
    as_____

    (a) Applied voltage   (b) V^2 (c) $1 / V$ (d) $\sqrt{V}$

5. The field coils of opposite poles are connected in series such that   CO3 -R
    mmfs are additive is called-------

    (a) Phase winding   (b) pole shoe   (c) winding   (d) none of the above

6. Which of the following motors is generally used in toys?   CO3- R

    (a) Reluctance motor   (b) hysteresis motor

    (c) shaded-pole motor   (d) two-value capacitor motor

7. It is the maximum load torque which the energized stepper motor can withstand slipping from equilibrium position is known as----- CO4- R

   (a) starting torque   (b) holding torque   (c) detent torque   (d) high torque

8. A variable reluctance stepper motor is constructed of _____ material with salient poles. CO4 -R

   (a) Paramagnetic   (b) ferromagnetic   (c) diamagnetic   (d) non-magnetic

9. Types of linear induction motor based on the principle of operation CO5- R

   (a) Linear Induction motor   (b) Linear synchronous motor

   (c) DC commutator linear motor   (d) All the above

10. The synchronous speed of a linear induction motor does not depend on _____ CO5 -R

    (a) width of pole pitch   (b) no of poles   (c) supply frequency   (d) any of the above

PART – B (5 x 2= 10Marks)

11. List the advantages of brushless dc motor drives. CO1- R

12. Mention the applications of permanent magnet synchronous motor. CO2- R

13. Differentiate switched reluctance motor from stepper motor. CO3 -R

14. Define hybrid stepper motor. CO4- R

15. What is linear motor? CO5- R

PART – C (5 x 16= 80Marks)

16. (a) (i) Enumerate the principle of operation of permanent magnet brushless dc motor. CO1 -U (8)

    (ii) Obtain the emf equation of square wave brushless motor. CO1 -U (8)

    Or

    (b) Sketch the torque-speed characteristics of a PMBLDC motor. Also Explain. CO1- U (16)

17. (a) Derive the expression for emf and torque of permanent magnet synchronous motor. CO2 -App (16)

    Or

    (b) Explain the construction and operation of PMSM. CO2- U (16)

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18. (a) Elaborate the various power controller circuits applicable to switched reluctance motor and explain the operation of any one scheme with suitable circuit diagram.. CO3- U (16)

Or

(b) Explain the operation with suitable circuit diagram of two power semiconductor switching devices and two diodes applicable to switched reluctance motor. CO3 -U (16)

19. (a) Discuss the construction and various modes of excitation of variable reluctance stepper motor. CO4 -U (16)

Or

(b) State and explain the static and dynamic characteristics of a stepper motor. CO4 -Ana (16)

20. (a) Describe the construction and principles of operation of hysteresis motors. Draw its relevant characteristics. CO5- U (16)

Or

(b) Draw and explain AC series motor also write with applications. CO5 -U (16)

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