Reg. No. :

PART A - (10 x 1 = 10 Marks)

1. Commutators in DC machines have a role of which converts

    (a) AC to DC   (b) both AC to DC and DC to AC

    (c) high voltage DC to low voltage DC   (d) none of these

2. EMF induced in a coil rotating in a uniform magnetic field will be maximum when the

    (a)Flux linking with the coil is maximum
    (b)Rate of change of flux linkage is minimum
    (c)Rate of change of flux linkage is maximum
    (d) Rate of cutting flux by the coil sides is minimum

3. Transformer are rated in KVA instead of KW because of

    (a) Load power factor is not known
    (b) KVA is fixed whereas KW depends on load power factor
    (c) Total transformer loss depends on VA
    (d) None of these

4. The short circuit test on a transformer is conducted to obtain

   (a) Copper losses   (b) Core loses only

   (c) Eddy current loss   (d) Hysteresis loss

5. Which one of the following statements is correct in respect of an induction motor?

   (a)The maximum torque will depend on rotor resistance

   (b)Although the maximum torque does not depend on rotor resistance, yet the speed
   at which maximum torque is produced depends on rotor resistance

   (c)The maximum torque will not depend on standstill rotor reactance

   (d) The slip of induction motor decreases as rotor increases

6. In an induction motor, what is the ratio of copper loss and rotor input?

   (a) S   (b) (1 - S)   (c) 1/S   (d) S/(1 - S)

7. What is the frequency of a alternator, if P = number of poles and N = revolution made
   per second?

   (a) PN / 2 Hz   (b) 120 / PN Hz   (c) 120N / P Hz   (d) 120P / N Hz

8. What is the distribution factor for a 108 slot, 12 pole, 3-Φ winding?

   (a) 0.88   (b) 0.96   (c) 0.92   (d) 1

9. Type of single phase motor having highest power factor at full load is

   (a) shaded pole type   (b) capacitor start

   (c) capacitor run   (d) split phase

10. The motor which can produce uniform torque from standstill to synchronous speeds is

   (a)Universal motor   (b)Stepper motor

   (c)Reluctance motor   (d) Hysteresis motor

PART - B (5 x 2 = 10 Marks)

11. A DC shunt motor is connected to a 3-point starter. What would happen if the field
    circuit becomes open-circuited with the motor running at no load?

12. Define all day efficiency.

13. Define slip of a three phase induction motor.

14. Mention the reasons if a 3-phase synchronous motor fails to start.

15. Which type of 1-phase induction motor would be used for Ceiling fan and Wet grinder?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Derive the EMF equation of DC generator. (8)

    (ii) An 8-pole DC shunt generator has 778 wave-connected armature conductors running at 500 *rpm*, supplies a load of 12.5 *ohm* resistance at a terminal voltage of 250 *V*. The armature resistance is 0.24 *ohm* and the field resistance is 250 *ohm*. Find out the armature current, the induced EMF and the flux per pole. (8)

Or

(b) (i) Derive the torque equation of the DC motor. (8)

    (ii) What is back EMF and explain the significance of Back EMF. (8)

17. (a) Derive the EMF equation of a transformer. (16)

Or

(b) Draw the equivalent circuit of a transformer and derive the components with respect toprimary and secondary side. (16)

18. (a) Discuss the various starting methods of 3 phase induction motors. (16)

Or

(b) With neat sketch, explain the principle and construction of 3 phase induction motors. (16)

19. (a) Explain the constructional details of three phase alternator with neat sketch. (16)

Or

(b) (i) Discuss about the various starting methods of synchronous motor. (8)

    (ii) Explain the procedure to obtain the V and inverted V curves of a synchronous motor. (8)

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20. (a) Draw the constructional diagram of the stepper motor. Explain its different modes of working. (16)

Or

(b) (i) Describe the construction and principle of operation of capacitor start and run single phase induction motor. (8)

(ii) Explain the construction and working principle of switched reluctance motor with diagrams. (8)

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