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Objective Questions (5 marks)

1. Speed of the stator rotating magnetic field of an Induction motor is
(a) Synchronous speed
(b) Any speed
(c) Less than Synchronous
(d) Slip Speed

Answer: (a) Synchronous speed

2. Difference in speed between the stator rotating magnetic field and the rotor is
(a) Full load speed
(b) No load speed
(c) Slip speed
(d) Regulation

Answer: (c) Slip speed

3. Frequency of current in rotor
(a) Supply frequency
(b) Less than supply frequency
(c) Greater than supply frequency
(d) Slip frequency

Answer: (d) Slip frequency

4. A 415 V, 50 Hz three-phase induction motor rotates at 1440 rpm is wound for
(a) 2 poles
(b) 4 poles
(c) 6 poles
(d) 8 poles

Answer: (b) 4 poles

We know that $N_s = 120f/p$, and N_r is slightly less than N_s .

5. Blocked rotor test is conducted at
(a) High voltage
(b) Rated current
(c) High current
(d) Rated voltage

Answer: (b) Rated current

6. When rotor is at standstill
(a) slip is zero
(b) slip is one
(c) Any slip
(d) Slip is infinity

Answer: (b) slip is one

Standstill is stationary, which means $N_r = 0$ or $s = 1$. The same situation as starting.

7. When the rotor circuit resistance of a an induction motor is increased
(a) The starting torque increases
(b) the maximum values of torques decreases
(c) the slip at which maximum torque occurs remains unchanged
(d) maximum torque is developed at starting

Answer: (a) The starting torque increases

When the rotor circuit resistance is increased, starting torque increases. The answer (d) is only true for a certain value of rotor resistance.

8. Torque developed by a three-phase induction motor with the applied voltage of 400 V is 100 Nm. If the applied voltage is reduced to 200 V, the developed torque roughly will be:
(a) 50 Nm
(b) 25 Nm
(c) 200 Nm
(d) 62.5 Nm

Answer (b) 25 Nm

We know that T is proportional to V^2 . When the voltage decreases by half, torque decreases by one fourth.

9. Speed of rotor field in space (with respect to stationary reference frame) is
(a) rotor speed, N_r
(b) Any speed
(c) synchronous speed, N_s
(d) Slip speed

Answer: (c) synchronous speed, N_s

10. If stator field is rotating in clockwise direction, rotor rotates in
(a) Any direction
(b) Cannot predict
(c) Anticlockwise
(d) clockwise

Answer: (d) clockwise