

**BITT POLYTECHNIC Ranchi-835217**  
**Department of Electrical Engineering**

**Sub: - Electrical Machine-II**

**Sem- 5<sup>th</sup> (EE)**

**A. Objectives Questions.**

1. At zero in an induction motor

- a) Motor runs as a generator
- b) Motor does not run
- c) The motor runs at synchronous speed
- d) Slip produced is zero

2. In an induction motor, rotor slots are usually not quite parallel to the shaft but are given a slight skew

- a) To reduce the magnetic hum
- b) To reduce the locking tendency of the rotor
- c) Both (a) and (b) above
- d) To increase the speed of the motor

3. The field of an induction motor rotor rotates relative to the stator at

- a) Rotor speed
- b) Synchronous speed
- c) Slip speed
- d) Very low speed

4. In an induction motor, rotor runs at a speed

- a) Equal to the speed of stator field
- b) Lower than the speed of stator field
- c) Higher than the speed of stator field
- d) Having no relation with the speed of stator field

5. Starters are used in induction motor because

- a) Its starting torque is high
- b) It is run against heavy load

- c) It cannot run in reverse direction
- d) Its starting current is five times or more than its rated current

6. When an induction motor runs at rated load and speed, the iron losses are

- a) Negligible
- b) Very heavy
- c) Independent of supply frequency
- d) Independent of supply voltage

7. By synchronous wattage of an induction motor is meant

- a) Stator input in watts
- b) Rotor output in watts
- c) Rotor input in watts
- d) Shaft output in watts

8. The emf induced in the rotor of an induction motor is proportional to

- a) Voltage applied to stator
- b) Relative velocity between flux and rotor conductors
- c) Both (a) and (b) above
- d) Slip

9. The synchronous speed of an induction motor is defined as

- a) Natural speed at which a magnetic field rotates
- b) The speed of a synchronous motor
- c) The speed of an induction motor at no load
- d) None of these

10. The starting torque of an induction motor is maximum when

- a) Rotor resistance equals rotor reactance
- b) Rotor resistance is twice the rotor reactance
- c) Rotor resistance is half the rotor reactance
- d) Rotor resistance is  $R_2$  times the rotor reactance

## **B. Short Answer Types Questions**

1. Write different part of 3- phase Induction motor.
2. Define synchronous speed, rotor speed and slip speed.
3. Write short note on induction generator
4. Write short note on linear induction motor
5. Write short note on ac series motor
6. Explain construction of 3-phase induction motor.
7. Write principle of operation of 3-phase induction motor.
8. Derive the equation of rotating magnetic field
9. Derive torque equation of 3-phase induction motor
10. Write four application of 3-phase induction motor

## **B. Long Answer Types Questions**

11. If the induced emf in the stator of an 8 pole induction motor has a frequency of 50 Hz and that in the rotor is 1.5 Hz, at what speed is the motor running and what is the slip?
12. Calculate the synchronous speed of 60 Hz frequency induction Motors having four poles.
13. Collect and Write 10 application of 3-phase induction motor
14. Draw and explain constructional diagram of 3-phase induction motor
15. Power flow diagram of 3-phase induction motor

## **Solutions:-**

### **A. Objectives Questions.**

1. (b)
2. (c)
3. (b)
4. (b)
5. (d)
6. (a)
7. (c)
8. (c)
9. (a)
10. (a)