

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE/EEE) (Sem.-5th)

ASYNCHRONOUS MACHINES

Subject Code : EE-301

Paper ID : [A0413]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A**1. Write briefly :**

- a) What is meant by rotor frequency in 3-phase induction motor?
- b) How the locking tendency of the rotor of 3-phase induction motor can be reduced?
- c) What are the drawbacks of wider air gap in 3-phase induction motor?
- d) Give significance of pull-out torque in 3-phase induction motor.
- e) Why 3-phase induction motor cannot run at synchronous speed?
- f) Draw torque slip characteristics of 3-phase induction motor at different rotor resistances.
- g) How a 3-phase induction motor may run as induction generator?
- h) Give limitations of stepper motor.
- i) Draw equivalent circuit of single phase induction motor.
- j) Give applications of Repulsion motor.

SECTION-B

2. What is the function of double cage in induction motor?

A 12 pole, three phase, 50 Hz induction motor has a slip of 4.5% having rotor resistance and reactance per phase 0.016 ohms and 0.078 ohms respectively.

- a) the available maximum torque in terms of synchronous torque
 - b) the speed at which the maximum torque occurs
3. Discuss significance of space harmonics on motor performance.
 4. Explain Scherbius scheme for speed control.
 5. Briefly describe working and application of Repulsion motor.
 6. Discuss the salient features of Repulsion motor.

SECTION-C

7. a) What is meant by leakage reactance of three phase induction motor?
- b) Give salient features of Kramer scheme for speed control of induction motor.
8. Give classification of stepper motors and their features, working and applications.
9. a) Why single phase induction motor cannot run at synchronous speed?
- b) Discuss importance of single phase induction motor characteristics.

