Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

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B.Tech.(EE) (2011 Onwards)/Electrical & Electronics/Electronics & Electrical) (2011 &2012 Batch)/
(Electrical Engineering & Industrial Control) (2012 Onwards)
(Sem.–4)

ASYNCHRONOUS MACHINES

Subject Code : BTEE-401
M.Code : 57104

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 have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Answer briefly :**

   a. Define slip of an induction motor.

   b. Explain slip frequency of a 3-phase induction motor.

   c. Why an induction motor operates at a very low power factor under no-load?

   d. Why an induction motor cannot run at synchronous speed?

   e. Write two application of single-phase induction motor.

   f. Why starting current is high for an induction motor?

   g. Why airgap between stator and rotor of induction motor is very small?

   h. If a single-phase induction motor is started with auxiliary winding open, what will happen?

   i. How direction of rotation of a three-phase induction motor can be reversed?

   j. Write the difference between a squirrel cage and slip ring induction motor.

SECTION-B

2. Discuss losses in a 3-phase induction motor.

3. Sketch and explain toque-slip characteristics of 3-phase induction motor.

4. Explain the starting of squirrel cage induction motor by using Direct-on-line method.

5. Explain how higher starting torque can be obtained in :

   a. Squirrel cage induction motor

   b. Wound rotor induction motor.

6. Explain how rotating torque is generated in a single-phase induction motor.

SECTION-C

7. Write the constructional features, working principle and applications of single-phase reluctance motor.

8. A 230V, 380W, 60 Hz, 4-pole, single phase induction motor gave the following test results :

   No-load test : 230V, 84W, 2.8A

   Blocked-rotor test : 110V, 460W, 6.2A

   The stator winding resistance is 4.5 ohms and during the blocked rotor test, the auxiliary winding is open. Determine the equivalent circuit parameters and draw the equivalent circuit.

9. Describe the methods of speed control of three phase induction motor.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.