

(Following Paper ID and Roll No. to be filled in your
Answer Books)

Paper ID : 121656

Roll No.

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B.TECH.

Theory Examination (Semester-VI) 2015-16

SPECIAL ELECTRICAL MACHINES

Time : 3 Hours

Max. Marks : 100

Section-A

1. **Attempt all parts. All parts carry equal marks. Write answer of each part in short.** (2×10 = 20)
- (a) What do you meant by Slip power recovery scheme?
 - (b) What are the advantages of Constant power and constant torque controls in slip ring induction motor?
 - (c) Why capacitor-start induction motors are advantageous?
 - (d) Why centrifugal switches are provided in most Single phase induction machine?
 - (e) Define Stepping angle.

- (f) What is meant by Detent torque?
- (g) Compare Permanent magnet brushless DC motor with Permanent magnet synchronous motor.
- (h) Name some applications of PMDC motor.
- (i) What is a universal motor?
- (j) List-out some applications of linear induction motors.

Section-B

2. Attempt any five questions from this section. [10×5=50]

- (a) Write a detailed note on Deep bar rotor construction and double cage rotor constructions.
- (b) Describe how can speed of a slip ring induction motor be controlled by injecting EMF in rotor circuit ?
- (c) Explain the construction and principle of operation of shaded pole induction motor along with torque-slip characteristics and the applications.
- (d) Elaborate the construction and torque speed characteristics of Two phase AC servomotors.
- (e) Write short note on Hysteresis motor and explain its salient features.

- (f) Derive the expression for EMF and torque developed in a Permanent Magnet Synchronous Motor.
- (g) Discuss the construction and principle of operation of various types of repulsion motors with neat sketch.
- (h) Explain the principle of operation of linear induction motor and show how does it differ from AC series motor?

Section-C

Note : Attempt any two questions from this section. (15×2=30)

- 3. (a) Write short note on AC series motor. (8)
- (b) Explain what are the necessary modifications to be done in DC series motor to convert into AC series motor? (7)
- 4. Explain the operation of the different types of stepper motor. Compare them with applications. (15)
- 5. Discuss the following operations in Switched reluctance motor:
 - (i) Method of rotor position sensing (7)
 - (ii) Sensor less operation (8)