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Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(EE) (2013 Batch E-II) (Sem.-2)

SPECIAL ELECTRIC MACHINES

Subject Code : MTEE-205A

Paper ID : [A2509]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

1. Explain the construction details of Shaded pole and servo motors with neat diagram and compare their performance for various applications. (20)
2. Explain in detail, the electromagnetic levitation and guidance schemes for high, medium and low speed systems. (20)
3. a) What are the advantages and applications of eddy current devices? (5)
b) Discuss the constructional details, operation and applications of a cross field machine. (15)
4. a) What are special features of a Rotating amplifier? Discuss its constructional details and operation. (10)
b) List the advantages and applications of various linear devices and actuators. (10)
5. Give complete control scheme of a Sine wave permanent Magnet (PM) Brushless motor drive while explaining purpose of each component. Explain its operation under speed control while showing its voltage, current and speed waveforms. (20)
6. a) What are methods to minimize various losses in a standard motor? (5)
b) Explain main features of energy efficient motors. (5)
c) Enumerate factors contributing to improved efficiency in an energy efficient motor. (5)
d) List various standards for energy efficient motors. (5)
7. a) How the permanent magnets can be used for brushless configuration in a synchronous motor? What are advantages of brushless configuration? (10)
b) Discuss various rotor configuration of a square wave PM brushless DC motor. (10)
8. Write short notes on **any two** of the following : (10×2)
 - a) Electromagnetic Clutches, coupling and brakes
 - b) Short primary and short secondary effects in linear electric motors
 - c) Synchronous Reluctance Motor