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Total No. of Pages : 01

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

SPECIAL ELECTRIC MACHINES

Subject Code : MTEE-205A

M.Code : 71363

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. a) Explain the construction and working principle of hysteresis motor.
   b) Discuss the principle of operation of AC servo motor.
2. Explain the principle of operation and constructional features of different types of Synchronous Reluctance Motor.
3. Describe the Hysteresis type and PWM type current regulator for one phase of a Switched Reluctance Motor with relevant circuit diagram.
4. a) Explain the principle of operation of a linear induction motor draw its characteristics. State its important applications.
   b) Explain the electromagnetic levitation and repulsion.
5. a) Distinguish between self-control and vector control permanent magnet synchronous motor.
   b) Explain the merits and demerits of DC linear motor.
6. a) Explain the operation of square wave permanent magnet brushless motor drive with neat diagram.
   b) Explain the construction and operation of switched reluctance motor with neat diagram.
7. A 100W, 2pole, 50Hz, 230V single phase series motor with salient poles has a total resistance of 15Ω leakage resistance of 40Ω, mutual resistance of 80Ω (in d-axis) and 500 (in q-axis). If the stray power losses are 20 watts, calculate the current, speed and power factor of the motor at full-load.
8. a) Explain the different types of linear synchronous motor and mention its applications.
   b) What is stepping angle? A VR Stepper Motor has 8 poles in the stator and they have five teeth in each pole. If the rotor has 50 teeth, calculate the step angle and resolution.

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.