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Total Pages: 3

BT-8/M-20

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SPECIAL ELECTRICAL MACHINES-I

Paper-EE-406N

Time Allowed: 3 Hours] [Maximum Marks: 75

Note: Attempt **five** questions in all selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT-I

- Describe operation principles of single phase Induction motor. Also explain double field revolving theory and prove that a single phase induction motor is not self-starting.
- 2 (a) Explain the working principle and applications of single phase shaded-pole motor in detail. 8
 - (b) Describe different types of FHP motors and their uses in Industrial applications.

UNIT-II

3. Briefly explain the working principle of different types of Linear Induction Motor and Actuators with their applications.

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4. Describe high performance energy efficient machines.

Also explain the effect of EMF injected into secondary circuit.

UNIT-III

- 5. (a) Why induction generator is used in wind turbines and what types of generations are used in wind turbines?
 - (b) Describe the DC generator technology used in Biogas power plant. 7
- 6. Describe Generator types in Tidal turbines. Also explain Conventional design for tidal generators. 15

UNIT-IV

- 7. (a) Illustrate the different modes of operation of switched reluctance motor. 5
 - (b) Determine the step angle of a three phase switched reluctance motor having 12 stator poles and 8 rotor poles. What is the commutation frequency in each phase of 6000 rpm? 5
 - (c) Derive the torque equation of a reluctance motor and draw the torque slip characteristics. Mention its applications.

- 8. (a) Describe the Static and Dynamic characteristics of Stepper Motor. 5
 - (b) Explain construction and working principle of Servo Motor. 5
 - (c) Discuss the application area of different special Electrical machines. 5