

Code No: H4308/R13

M. Tech. II Semester Supplementary Examinations, May-2017

**SPECIAL MACHINES**

(Common to PE, P&amp;ID, PE&amp;ED, PE&amp;D and EM&amp;D)

Time: 3 Hours

Max. Marks: 60

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*Answer any FIVE Questions*  
*All Questions Carry Equal Marks*

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1. a Compare the static and dynamic characteristics of stepper motor with necessary diagrams. [6]  
b Explain the operation of multi stack stepper motor with neat diagram. [6]
2. a Derive the expression for torque for a switched reluctance motor. [6]  
b Compare stepper motors with switched reluctance motors w. r. t their characteristics and applications. [6]
3. a Discuss different current control schemes for Permanent magnet Synchronous Motors. [6]  
b Derive the torque expression for switched reluctance motors. [6]
4. a Explain the closed loop speed control of a switched reluctance motor. Also explain different controllers used in it. [6]  
b Discuss about self control mechanism in a Permanent magnet Synchronous Motor. [6]
5. a Discuss how HALL sensors can be used for position sensing of Permanent magnet Brushless DC motor. [6]  
b Draw the Torque Speed characteristics of a Permanent magnet Brushless DC motor and explain. [6]
6. a Explain the principle of operation of a servo motor with its characteristics. [6]  
b Explain the operating principle of an AC Tachometer with a neat schematic diagram. [6]
7. a What are different types of Linear Induction motor? Mention advantages & disadvantages of Linear Induction motors [6]  
b List any two major applications of Linear Induction motor and explain their suitability for such applications. [6]
8. a Explain about microprocessor control of a servo motor. [6]  
b Differentiate between Brushless DC Motor with conventional DC Motors. [6]

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