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**MEPS-302(A)****M.E./M.Tech., III Semester****Examination, June 2017****Special Machines****(Elective-II)****Time : Three Hours****Maximum Marks : 70**

- Note:** i) Attempt any five questions.  
 ii) All questions carry equal marks  
 iii) Assume any missing data.

1. Discuss the construction and working principle of square wave PMBLDC motor. Also draw its torque speed characteristics. 14
2. Describe the three phase three pulse sine wave PMBLDC motor, and draw its static torque angle characteristics. 14
3. Give the principle of operation of switched reluctance motor. How the torque is produced explain in brief with the help of expression. Also draw the angle-torque characteristics. 14
4. Classify the LIM. Explain the working principle of LIM. Obtain the expression of linear force. What do you mean by end effects? 14
5. Explain the drive circuits and differentiate between Unipolar and Bipolar drive circuits with the help of circuits diagrams. 14

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6. a) What are the important feature of stepper motors. 7
- b) What do you mean by synchronous reactance and inductance of phase working in case of PMBLDC motor. 7

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7. a) What are the problems of end effects in the LIM? How these are minimized if possible? 7
- b) Explain in brief: 7
  - i) Shaft position sensors
  - ii) Solid rotors
 regarding switched reluctance motor.

8. Write short notes on any two of the following: 14
  - i) Commutation and Armature reaction in PMBLDC motor.
  - ii) Differentiate between LIM and RIM.
  - iii) Torque versus stepping rate characteristics of stepper motor.
  - iv) Dynamic torque production of SRM.

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