

Code No: **R42024****R10****Set No. 1****IV B.Tech II Semester Supplementary Examinations, April/May - 2017****Special Electrical Machines****(Electrical and Electronics Engineering)****Time: 3 hours****Max. Marks: 75****Answer any FIVE Questions****All Questions carry equal marks**

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- 1 a) What is magnetic reluctance? Bring out the relationship between inductance and reluctance. [8]  
b) With a neat waveform, explain the variation of inductance with rotor position. [7]
- 2 a) Compare between stepper motors and switched reluctance motor. [6]  
b) Explain the operation of a variable reluctance stepping motor. [9]
- 3 a) Compare between BLDC motors and SR motors. [6]  
b) With a neat block diagram, discuss the closed loop operation of BLDC motor drive. [9]
- 4 a) What are linear motors? What are their applications? What are various types of linear motors? [8]  
b) Discuss the principle of operation of linear induction motor. [7]
- 5 a) Explain the operation and applications of permanent magnet DC motors. [8]  
b) What is electrically commutated DC Motor? Explain. [7]
- 6 a) With a neat schematic diagram, explain the open loop control of stepper motor. [8]  
b) Compare between open loop and closed loop systems. [7]
- 7 a) What is the use of rotor position sensing unit in BLDC motors. Explain different types of rotor position sensors. [9]  
b) Discuss the use of SRMs for fraction type loads. [6]
- 8 a) What are the main characteristics of traction motors? Explain. [8]  
b) Compare between AC traction and DC traction. [7]