Code No: **R42024** **R10** **Set No. 1**

IV B.Tech II Semester Supplementary Examinations, July/August - 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)	Define *aligned position, midway position* and *unaligned position* with respect to a switched reluctance motor.	[6]
	b)	Mention the advantages and applications of switched reluctance motors	[5]
	c)	Define *stator pole arc* and *rotor pole arc* of a switched reluctance motor.	[4]
2	a)	What are various types and applications of stepper motors?	[7]
	b)	Explain the torque production in stepper motors and derive an expression for torque produced.	[8]
3	a)	In what way BLDC motor is different from synchronous motor? Explain.	[8]
	b)	Discuss the need for rotor position sensor in BLDC motor operation.	[7]
4	a)	What are the advantages of using linear motors for electric traction?	[6]
	b)	Explain the application of linear induction motor drive for electric traction.	[9]
5	a)	Draw the B-H curve of a magnetic material and discuss the role of hysteresis loop.	[8]
	b)	Explain the advantages and disadvantages of permanent magnet DC motors compared to conventional DC motors.	[7]
6	a)	What are the advantages of closed loop system over open loop systems? Explain.	[7]
	b)	With a neat schematic diagram, explain the operation of power converter for stepper motor.	[8]
7		With the help of model waveforms for back emf, gate pulses of converter, stator currents and stator voltages, explain the operation of a BLDC motor.	[15]
8	a)	Discuss the role of linear motors for electric traction.	[7]
	b)	Explain the use of single sided linear induction motor for traction drives.	[8]