Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

Course Code: MR466

Course Name: Special Electrical Machines and Applications

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1		Elucidate the mode of excitation of stepper motor	(5)
2		Describe the characteristics and control of switched reluctance motor	(5)
3		Interpret the reluctance torque in synchronous reluctance motor	(5)
4		Write a short note on square wave permanent magnet brushless motor drives	(5)
5		Illustrate about control schemes used in permanent magnet synchronous motor	(5)
6		Describe the capacitor start and capacitor run motor	(5)
7		Elucidate the constructional features of permanent magnet synchronous motor	(5)
8		Write a short note on servomotor	(5)

PART B

Answer any three full questions, each carries 10 marks.

9	a)	Interpret the constructional features of stepper motor	(5)
	b)	Give the operating principle of stepper motor	(2)
	c)	Describe the mode of operation of single phase stepping motor	(3)
10	a)	Derive the torque equation of switched reluctance motor	(3)
	b)	Interpret principle of operation of switched reluctance motor	(5)
	c)	Elucidate the characteristics and application of switched reluctance motor	(2)
11	a)	Give the phasor diagram and motor characteristics of synchronous reluctance motor	(5)
	b)	Explain about axial and radial air gap motors	(3)
	c)	Give the sufficient application of synchronous reluctance motor	(2)
12	a)	Differentiate between mechanical and electrical commutators	(3)
	b)	Derive the torque and EMF equation of PMBDC motor	(5)
	c)	Interpret about Hall sensor and Optical sensor	(2)
13	a)	Elucidate the application of PMBDC motors	(2)
	b)	Describe the different types of commutators	(3)

	c)	Elucidate the working and constructional features of PMBDC motors	(5)

PART C

Answer any two full questions, each carries 15 marks.

14	a)	Interpret the constructional features of PM synchronous motor	(5)
	b)	Derive the power input and torque expression for PM synchronous motor	(5)
	c)	Compare the control schemes used in PM synchronous motor	(5)
15	a)	Derive the EMF equation of PM synchronous motor	(5)
	b)	Interpret the working principle of PM synchronous motor	(5)
	c)	Give the application of PM synchronous motor	(5)
16	a)	compare operations of the capacitor start and capacitor run motor	(5)
	b)	Write a short note on single phase induction motor	(5)
	c)	Interpret the application of single phase induction motor in mechatronics	(5)
17	a)	Interpret the constructional features of universal motor	(5)
	b)	Give application of servo motor in mechatronics	(5)
	c)	Describe the working principle of universal motor	(5)

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