Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree Examination June 2022 (2015 Scheme)

Course Code: EE402

Course Name: SPECIAL ELECTRICAL MACHINES

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1		What are the requirements of good servomotor?	(5)
2		Explain the static characteristics a stepper motor ?	(5)
3		Draw the phasor diagram of AC series motor and hence write the voltage equation.	(5)
4		List any five applications of synchronous reluctance motor.	(5)
5		Explain the classification BLDC motor based on the rotor construction.	(5)
6		Draw and explain the performance characteristics of a Permanent Magnet DC motor.	(5)
7		What are the advantages of linear motors?	(5)
8		Compare Slotless Linear synchronous Motors and Slotted Linear Synchronous Motors.	(5)

PART B

Answer any two full questions, each carries 10 marks.

9	a)	Explain the principle of operation of an AC Servomotor with the help of a block diagram.	(5)
	b)	Explain the construction of multi stack variable reluctance stepper motor.	(5)
10	a)	Define Holding torque and Detent torque of a stepper motor.	(4)
	b)	Explain the half step mode operation of a permanent magnet stepper motor.	(6)
11	a)	With a neat diagram explain the armature controlled DC servomotors.	(5)
	b)	Explain the working of series split field DC servomotor	(5)

PART C

Answer any two full questions, each carries 10 marks.

12		Explain the construction and working principle of a hysteresis motor. Also draw its torque-speed characteristics.	(10)

13	a)	Derive the torque equation of a Synchronous reluctance motor.	(6)
	b)	List any four applications of switched reluctance motor.	(4)
14	a)	Draw and explain any one Power Converter Circuits for Switched Reluctance Motors.	(5)
	b)	What is the use of compensating winding in an AC Series motor? List different types of compensating windings.	(5)

PART D

Answer any two full questions, each carries 10 marks.

15		Explain the principle of operation of Permanent Magnet BLDC motor for 120 degree commutation with neat circuit diagram.	(10)
16	a)	Explain the construction of Permanent Magnet DC motor with diagram.	(5)
	b)	Draw and explain the equivalent circuit of linear Induction motor .	(5)
17	a)	With necessary diagrams explain construction of axial field Linear Induction motors.	(5)
	b)	Explain the types of Linear Synchronous motor with electromagnetic excitation systems.	(5)

****