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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S) Exam April 2025 (2019 Scheme)

Course Code: MRT434

Course Name: SPECIAL ELECTRICAL MACHINES AND APPLICATION

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1	List out few comparisons between Permanent Magnet and Variable Reluctance stepper motors?	(3)
2	Define Step Angle? Give brief Explanation?	(3)
3	Briefly explain the principle of operation of DC servomotor?	(3)
4	What are the applications of DC and AC servomotor?	(3)
5	What are the applications of induction generators?	(3)
6	Draw torque - slip characteristics of induction generator?	(3)
7	What is brushless and brushed motors?	(3)
8	What is mean by electrical and mechanical commutation?	(3)
9	What are the disadvantages of repulsion motor?	(3)
10	Draw the torque-speed characteristics of synchronous reluctance motor?	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	What do you mean by stepper motor? Explain construction and working principle of variable reluctance stepper motor?	(14)

OR

12	a)	With neat figure explain the construction and working of hybrid type stepper motor?	(10)
	b)	Explain the characteristics of Stepper Motor?	(4)

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Module II

13 a) Explain Damped AC servomotor? (10)

b) Sketch the characteristics of AC servomotor? (4)

OR

14 a) With relevant diagrams explain Drag cup Servomotors? (10)

b) Explain characteristics of DC servomotor? (4)

Module III

15 a) Describe about the construction and working of universal motor with suitable diagram? (10)

b) Describe the principle of operation of induction generator? (4)

OR

16 a) Draw the phasor diagram of Induction Generator and explain? (8)

b) List the advantages and disadvantages of Induction Generator? (6)

Module IV

17 a) Discuss about voltage source inverter fed BLDC motor? (10)

b) Write the advantages and disadvantages of Brushless DC Motors? (4)

OR

18 a) With a neat figure describe the construction and operation of BLDC motor? (10)

b) List out few applications of BLDC motor? (4)

Module V

19 a) Explain the construction and working of hysteresis motor with a neat diagram? (10)

b) Discuss about Speed-Torque Characteristics of Hysteresis motor? (4)

OR

20 a) With a neat figure explain the principle of operation of repulsion motor? (7)

b) Draw & explain the characteristics of repulsion motor? (7)

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