Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree (R, S) Examination May 2024 (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.	Compare 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.	Briefly explain the working of AC servomotor	(3)
5.	What are the applications of induction generators	(3)
6.	What is a universal motor, and how does it differ from other types of motors?	(3)
7.	Draw the basic block diagram of a BLDC motor	(3)
8.	Compare brushless and brushed motors	(3)
9.	What are the disadvantages of repulsion motor	(3)
10.	What are the applications of hysteresis motor	(3)

PART B

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

Module I

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

OR

12.	a)	Explain the construction and working of a Permanent magnet Stepper motor in detail?	(10)
	b)	Explain Muti Stack Variable Reluctance Stepper Motor?	(4)

Module II

13.	a)	With relevant diagrams explain field-controlled DC Servomotors?	(9)
	b)	Explain damped AC servomotor?	(5)

OR

14. a) Explain the construction of AC servomotor? (10)

b) Briefly explain series split filed DC servomotor? (4)

Module III

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

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

OR

16. a) Briefly explain the speed control of Universal Motor? (6)

b) Explain the constructional details of Universal Motor? (8)

Module IV

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

b) Explain in detail electronic commutation in a BLDC motor? (4)

OR

18. a) Compare between Voltage source and current source inverter fed BLDC motor? (10)

b) Write the application of BLDC motor? (4)

Module V

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

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

OR

20. a) Explain in detail the construction, characteristics and operation of permanent magnet synchronous motor? (10)

b) What are the applications of reluctance motor? (4)

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