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Reg No.: _____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (R,S) Examination November 2024 (2019 Scheme)



Course Code: MRT201

Course Name: ELECTRICAL MACHINES & DRIVES

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks

Marks

- 1 Explain the motoring and generating actions of a DC machine. (3)
- 2 The starters are necessary for DC motors. Why it is necessary and list the different types of starters. (3)
- 3 A single phase transformer has 400 primary and 1000 secondary turns. If the primary winding is connected to a 50 Hz supply at 520 V, calculate the maximum flux in the core. (3)
- 4 Describe why the slots on the rotor of an induction motor are usually skewed? (3)
- 5 The single phase induction motor is not self-starting. Why and how can it be made self-starting? (3)
- 6 Explain the EMF method to find the voltage regulation of an alternator. (3)
- 7 Briefly explain different types of stepper motors. (3)
- 8 Explain the basic concept of a rectifier circuit. (3)
- 9 Discuss the factors determining the choice of electrical drives. (3)
- 10 Write the fundamental torque equation and explain its components. (3)

PART B

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

Module 1

- 11 Describe the essential parts of DC machines regarding their construction with a neat sketch. (14)
- 12 Explain different types of DC generators according to the ways in which fields are excited. Show the connection diagram of each type. (14)

Module 2

- 13 Describe the constructional features and principle of operation of transformer. (14)

- 14 Discuss the theory of operation of a three phase induction motor. What is meant by slip of an induction motor? Explain the importance of slip in operation and performance of induction motor. (14)

Module 3

- 15 Discuss the types of single phase induction motors. (14)
- 16 Make neat, labelled sketches of salient pole and cylindrical synchronous machines and compare them with reference to their (i) number of poles (ii) speed (iii) axial length and (iv) applications. (14)

Module 4

- 17 Explain the construction and working of synchronous motor with a neat sketch. (14)
- 18 Explain different modes of operation of SCR. (14)

Module 5

- 19 With neat sketch explain the various components in electric drive. (14)
- 20 Write short notes on (14)
- (i) Steady state stability
 - (ii) Load equalization.
