



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S3 (S,FE) Examinations June 2026 (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 principles of DC generators and DC motors. (3)
- 2 Describe how the back EMF of a motor causes the development of mechanical power. (3)
- 3 In what way a practical transformer differs from an ideal transformer? (3)
- 4 A 60 Hz induction motor has 2 poles and runs at 3510 rpm. Calculate (3)
a) the synchronous speed and
b) the percentage slip.
- 5 Explain the working principle of split phase induction motors. (3)
- 6 Define voltage regulation. List different methods used to determine voltage regulation of an alternator. (3)
- 7 Describe the working principle of a synchronous motor. (3)
- 8 Explain the concept of SCR with symbol. (3)
- 9 State essential parts of an electrical drive. What are the functions of a power modulator? (3)
- 10 Define electrical drive. What are the components of load torque? (3)

PART B

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

Module 1

- 11 Give constructional features of a DC machine with a neat sketch. (14)
- 12 Sketch the load characteristics of (i) DC shunt generator and (ii) DC series generator. Give reasons for the particular shape in each case. (14)

Module 2

- 13 Draw the general schematic of a single phase transformer. Describe its (14)

working principle and deduce the expression for EMF in secondary winding.

- 14 Explain torque slip characteristics of the three phase induction motor with a neat sketch. (14)

Module 3

- 15 Investigate the concept of double revolving field theory and its application in the working of single phase induction motors. (14)
- 16 Differentiate between different rotor constructions of alternators with neat sketches. (14)

Module 4

- 17 Explain the construction and working principle of universal motor with necessary sketches. (14)
- 18 a) Draw and explain the VI characteristics of a SCR. (7)
- b) Write a short note on fully controlled bridge rectifier with R load. (7)

Module 5

- 19 Explain the speed torque convention and the multi quadrant operation of an electric drive with relevant diagrams. (14)
- 20 Explain electric drive with a block diagram. (14)
