Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech Degree Regular and Supplementary Examination December 2022 (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	Draw and explain the no load characteristics of dc generators.	(3)
2	A dc motor takes an armature current of 110A at 480V. The armature circuit resistance is 0.2 ohm. The machine has 6 poles and the armature is lap connected with 864 conductors. The flux per pole is 0.05 Wb. Calculate the speed.	(3)
3	Briefly explain different types of losses in transformers.	(3)
4	Compare squirrel cage and slip ring induction motors.	(3)
5	Explain the working principle of capacitor start single phase induction motor	(3)
6	Define Voltage regulation. What is the method used to determine voltage regulation?	(3)
7	Which motor is used for both ac and dc supply? Explain its working principle.	(3)
8	Briefly explain basic concept of inverter.	(3)
9	Explain the factors determining choice of electrical drives.	(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	Explain working of a simple loop generator. Also derive the emf equation of the dc generator.	(14)
12	What is the necessity of a starter? Explain working of 2 point starter with a neat diagram.	(14)

Module 2

13	Draw and explain phasor diagram of practical transformer under different load conditions.	(14)
14	Explain the working principle of a three phase induction motor. Derive equation for maximum running torque.	(14)

Module 3

15	Explain the working principle of a single phase induction motor. How to make a single phase induction motor self-starting?	(14)

16 Explain the construction of alternator. Compare salient pole and cylindrical pole type alternators. (14)

Module 4

17 Explain construction and working of synchronous motors with a neat diagram. (14)

18 Explain different modes of operation of SCR (14)

Module 5

19 Explain multiquadrant operation of electrical drive (14)

20 Draw and explain the block diagram of an electrical drive. (14)

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