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Pages: 2

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

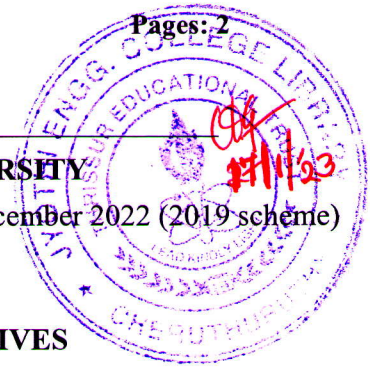
Third Semester B.Tech Degree Regular and Supplementary Examination December 2022 (2019 scheme)

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)
