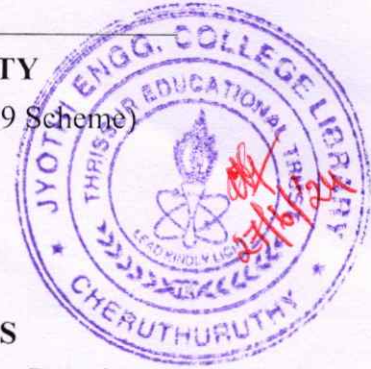


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech Degree (S, FE) Examination June 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 function of commutator, pole and brushes in dc machine. | (3) |
| 2 | Write the different types of starters of dc motor. What is need of a starter. | (3) |
| 3 | Derive emf equation of transformer. | (3) |
| 4 | Define slip and write the related equation. | (3) |
| 5 | Explain the working principle of single phase induction motor. | (3) |
| 6 | Compare salient pole and cylindrical rotor type alternator. | (3) |
| 7 | Explain mechanism of servomotor. | (3) |
| 8 | Define latching current and holding current | (3) |
| 9 | Define electric drive. Also classify electric drive. | (3) |
| 10 | Derive fundamental torque equation. | (3) |

PART B*Answer any one full question from each module. Each question carries 14 marks***Module 1**

- | | | |
|----|---|------|
| 11 | Describe dc shunt generator with neat circuit diagram and necessary equations. Also explain internal and external characteristics dc shunt generator. | (14) |
| 12 | Explain working of three point starter with help of neat diagram. | (14) |

Module 2

- | | | |
|----|---|------|
| 13 | Draw and explain phasor diagram of transformer under resistive, capacitive and inductive load condition considering losses. | (14) |
| 14 | Explain different types of starting methods of three phase induction motor. | (14) |

Module 3

- | | | |
|----|---|------|
| 15 | Explain double field revolving theory. Also draw torque slip characteristics of single phase induction motor. | (14) |
|----|---|------|

- 16 Explain features of salient pole type alternator. Describe a suitable method for determining voltage regulation in alternator. (14)

Module 4

- 17 Explain construction and working of motor which works in both ac and dc. List applications of this motor. (14)
- 18 Describe working of single phase half wave controlled rectifier with help of neat circuit diagram and waveforms. (14)

Module 5

- 19 Explain multi quadrant operation of drive. (14)
- 20 What are different methods for speed control of three phase induction motor? Explain stator voltage control of induction motor drive. (14)