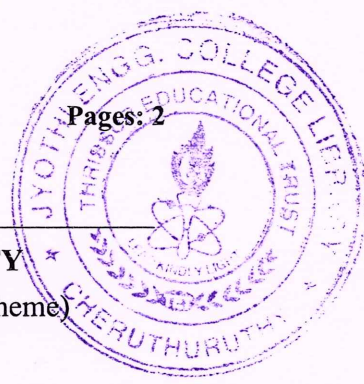


Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S6 (S,FE) Examination December 2025 (2019 Scheme)

**Course Code: RAT304****Course Name: ELECTRIC DRIVES AND CONTROL****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

- |    |  |     |
|----|--|-----|
| 1  | List the starting methods of dc motors.                      | (3) |
| 2  | Compare BLDC and normal dc motors.                           | (3) |
| 3  | Summarise the types of firing in SCRs.                       | (3) |
| 4  | Sketch the RC triggering circuit for SCR.                    | (3) |
| 5  | Distinguish continuous and discontinuous conduction methods. | (3) |
| 6  | Brief the concept of freewheeling diodes.                    | (3) |
| 7  | Describe voltage control in inverters.                       | (3) |
| 8  | Identify the advantages of PWM inverters.                    | (3) |
| 9  | List the benefits of drives in motor control.                | (3) |
| 10 | Identify sensor-less control in PMSM.                        | (3) |

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

- 11 a) With neat diagrams, explain the mechanism of the drive system in motor control. (14)  
Also, illustrate the process.

**OR**

- 12 a) Describe the types of servo motors. (10)  
b) Explain the selection criteria of motors. (4)

**Module II**

- 13 a) With neat graphs, outline the VI and switching characteristics of thyristors. (14)

**OR**

- 14 a) Explain the gate protection circuits. (6)  
b) Summarise the types of isolation circuits in SCR control systems. (8)

**Module III**

- 15 a) Explain with diagrams and graphs, explain class E choppers. (14)

OR

- 16 a) With the diagram, describe the 3 phase controlled rectifier. (10)  
b) Write a short note on armature control of DC motor drives. (4)

**Module IV**

- 17 a) Outline the concept of pulse width modulation and brief single pulse width, multiple pulse width & sine PWM with necessary graphs. (14)

OR

- 18 a) Explain with diagrams and graphs, a three-phase bridge inverter with 120° conduction mode. (14)

**Module V**

- 19 a) Identify the position control of servo system. (4)  
b) Outline microcontroller-based synchronous motor drives. (10)

OR

- 20 a) Paraphrase the concept, Sizing of servomotors. (7)  
b) Illustrate speed control of the BLDC motor. (7)

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