

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER – 2025**

INDUSTRIAL ELECTRONICS AND CONTROL DRIVES

[Maximum marks: 100]

(Time: 3 Hours)

PART – A

Maximum marks : 10

I (Answer *all* the questions in one or two sentences. Each question carries 2 marks)

1. Define holding current.
2. Draw the symbols of the following.
 1. TRIAC
 2. LASCR
3. Intrinsic stand off ratio of UJT.
4. Mention two applications of servomotor.
5. Define chopper.

(5 x 2 = 10)

PART – B

Maximum marks : 30

II (Answer any *five* of the following questions. Each question carries 6 marks)

1. Describe the structure and constructional features of SCR.
2. Explain the characteristics of DIAC.
3. Draw and explain UJT relaxation oscillator.
4. Explain single phase series inverter with circuit diagram and waveforms.
5. Describe the methods of speed control of DC motors.
6. Write notes on soft start of AC and DC motors.
7. Draw the circuit diagram and wave form of single phase cycloconverter. (5 x 6= 30)

PART – C

Maximum marks : 60

(Answer one full question from each unit. Each full question carries 15 marks)

UNIT –I

- III. (a) Explain transistor analogy of SCR. (6)
- (b) Draw and explain the structure and working of TRIAC. (9)

OR

- IV. (a) Explain VI characteristics of SCR with diagrams. (8)
(b) Write the protection methods of power semiconductor devices. (7)

UNIT-II

- V. (a) Explain the triggering methods of SCR. (8)
(b) With necessary diagrams explain three phase bridge inverter. (7)

OR

- VI. (a) Explain any two methods of commutation techniques used in SCR. (8)
(b) With suitable diagram explain full wave midpoint converter. (7)

UNIT-III

- VII. (a) Describe three phase induction motor with necessary sketches. (8)
(b) Explain the principle and operation of tachogenerator. (7)

OR

- VIII. (a) With necessary diagrams explain the load characteristics of shunt and series motor. (8)
(b) Explain universal motor with suitable sketches. (7)

UNIT-IV

- IX. (a) Draw and explain three phase dual converter. (9)
(b) Write short notes on speed control of DC drives. (6)

OR

- X. (a) Explain Jone's chopper with diagrams. (9)
(b) Compare AC and DC drives. (6)
