

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL - 2025**

INDUSTRIAL ELECTRONICS & 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 power diode.
2. List any two protection methods of switching devices.
3. Write the expression for the output voltage of bridge convertor.
4. State Fleming's left hand rule.
5. Write any two applications of cyclo converters. (5 x 2 = 10)

PART – B

Maximum marks: 30

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

1. Write a brief note on the following terms with respect to an SCR:
(a) Holding current (b) latching current (c) Turn-on and Turn-off time.
2. Describe the static transfer switch.
3. Draw the pin diagram of PWM chip SG3524 and give the description of each pin.
4. List any six applications of servo motors.
5. Explain variable voltage speed control method of induction motor.
6. Compare AC and DC drives.
7. Describe the operations of step up chopper. (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) Draw and explain the static VI characteristics of SCR. (8)

- (b) Draw and explain the working of snubber circuit for SCR. (7)

OR

- IV. (a) Describe the UJT triggering of SCR. (8)
(b) Describe the working principle of DIAC. (7)

UNIT - II

- V. (a) Describe the Class A commutation technique. (6)
(b) Explain the single phase full bridge inverter with circuit diagram and waveforms. (9)

OR

- VI. (a) With circuit diagrams and waveforms, explain the operation of single phase half wave converters using resistive load. (8)
(b) Describe the working of TRIAC light dimming circuit. (7)

UNIT - III

- VII. (a) Explain the operation of single phase induction motor. (7)
(b) Explain the working of DC tachogenerator. (8)

OR

- VIII. (a) Explain the principle of operation of DC motor. (7)
(b) Explain the working principle of AC servo motors. (8)

UNIT – IV

- IX. (a) Describe the working of Jones chopper. (8)
(b) Describe the operation of three phase dual converter. (7)

OR

- X. (a) Explain the working of single phase cyclo converter. (7)
(b) With circuit diagrams and waveforms explain the operation of AC chopper. (8)
