

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2022**

INDUSTRIAL ELECTRONICS & CONTROL DRIVES

[Maximum Marks: **100**]

[Time: **3 Hours**]

PART-A

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

1. Define latching current.
2. What is the role of a snubber circuit?
3. What is Pulse Width Modulation?
4. Define Fleming's left hand rule.
5. List any two application of chopper. (5 x 2 = 10)

PART-B

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

1. Explain the VI characteristics of a power diode.
2. Describe the method to control the speed of induction motor.
3. Explain structure of Triac.
4. Explain single phase bridge inverter with relevant waveform.
5. List the application of servomotor.
6. Describe the operation of a three phase converter.
7. Define cyclo converter and write down its applications. (5 x 6 = 30)

PART-C

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

UNIT – I

- III. (a) Explain in detail the transistor analogy of SCR. (8)
- (b) Describe the following terms.
- i) Holding Current ii) Latching Current iii) Gate Triggering. (7)

OR

- IV. (a) With the help of suitable diagram, Explain the structure of power diodes. (8)
(b) Explain R triggering of SCR. (7)

UNIT – II

- V. (a) Explain PWM Chip- SG3524. (7)
(b) Explain the working of TRIAC light dimming circuit. (8)

OR

- VI. (a) Define the working principle of three phase bridge inverter. (8)
(b) Explain the working of single phase half wave convertor with R load. (7)

UNIT- III

- VII. (a) Describe the working principle of a single phase induction motor. (8)
(b) Illustrate the construction and operation of universal motor. (7)

OR

- VIII. (a) Explain in detail the working principle of DC servomotor. (6)
(b) Compare the given three motors:
i) Series motor ii) Shunt motor iii) Compound motor. (9)

UNIT - IV

- IX. (a) Distinguish between AC and DC drives. (8)
(b) Explain the working of Jone's chopper with suitable waveform. (7)

OR

- X. (a) Define the principle of chopper and enlist its application. (6)
(b) Mention the application of single phase and three phase dual converter. (9)
