

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE , APRIL – 2023**

INDUSTRIAL ELECTRONICS AND CONTROL DRIVES

(Maximum Marks : 100)

(Time : 3 hours)

PART – A
(Maximum Marks : 10)

Marks

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

1. Draw the symbol of Power diode and SCR.
2. Define the terms turn on time and turn off time of SCR.
3. What do you mean by static transfer switch?
4. State Fleming's left hand rule.
5. List the applications Choppers.

(5x2=10)

PART – B
(Maximum Marks : 30)

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

1. Illustrate the role of snubber circuits.
2. With a neat diagram describe the working of Triac light dimming circuit.
3. Explain the operation of single-phase half wave converter.
4. Describe the factors affecting the speed of DC motors.
5. Describe working principle of DC servo motors.
6. Describe the working of Jone's chopper with waveforms.
7. Explain the speed control of DC drive.

(5x6=30)

PART – C

(Maximum Marks : 60)

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

UNIT – I

- III.** (a) Describe the structure, working principle and the static characteristics of a Triac with necessary sketches. (9)
- (b) With a neat circuit diagram explain V-I characteristics of the power diode. (6)

OR

- IV.** (a) Illustrate pulse triggering of SCR with necessary circuit diagram and timing waveforms.(7)
- (b) Describe the structure, working principle and the static characteristics of a Diac with necessary sketches. (8)

UNIT – II

- V.** (a) Describe the working principle of three phase bridge inverter with relevant circuit Diagram and waveforms. (7)
- (b) With the help of necessary sketches explain the working of full wave midpoint converter with resistive load. (8)

OR

- VI.** (a) Explain single phase series inverter with relevant waveforms. (8)
- (b) Describe the operation of three phase converter. (7)

UNIT –III

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

OR

- VIII.** (a) Describe variable voltage and variable frequency speed control of induction motors. (7)
- (b) With a neat diagram, discuss the working principle of AC tacho generator. (8)

UNIT – IV

- IX.** (a) Describe the construction and working principle of step down chopper with relevant waveforms. (9)
- (b) Differentiate AC and DC drives. (6)

OR

- X.** (a) With the help of a neat diagram explain the working principle of Single phase dual converter. (7)
- (b) Describe the working of cyclo converters with relevant circuit diagrams and waveforms. (8)
