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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2026

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 power diode.
2. State the purpose of PWM chip SG3524 in power electronics.
3. Define natural commutation in SCRs.
4. Draw the symbol of TRIAC.
5. Define inverter in power electronics. (5 x 2 = 10)

PART – B
(Maximum marks: 30)

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

1. Explain two transistor analogy of SCR with neat diagram.
2. Define the terms holding current, latching current, and gate current in an SCR.
3. Explain Fleming's Left-Hand Rule with a labeled diagram.
4. Describe the factors affecting the speed of DC motors.
5. List the applications of servomotor.
6. Draw a neat circuit diagram of step-down chopper.
7. Compare the characteristics of AC drives and DC drives. (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 the VI characteristics of an SCR. (7)

(b) Describe the structure of a DIAC with a labelled diagram. (8)

OR

IV. (a) Explain the structure of a TRIAC. (7)

(b) Explain the construction details of SCR with a labeled diagram. (8)

UNIT - II

V. (a) Explain Class A commutation with a neat circuit diagram. (7)

(b) Illustrate the working of a TRIAC-based light dimming circuit. (8)

OR

VI. (a) Draw the circuit diagram of a Three phase bridge inverter. (7)

(b) Explain the working of single-phase bridge converter (8)

UNIT - III

VII. (a) Explain the working of a DC servo motor. (7)

(b) Explain the working principle of a single-phase induction motor. (8)

OR

VIII. (a) Explain the working of DC tachogenerator with a neat diagram. (7)

(b) Explain Speed Control of Induction Motor by Variable Frequency method. (8)

UNIT – IV

IX. (a) List the applications of cycloconverters. (7)

(b) Explain the working of AC choppers. (8)

OR

X. (a) Explain the working of single-phase dual converter with a diagram. (7)

(b) Explain the working of Jones chopper. (8)
