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(Revision-2015/19)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2024

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 of an SCR.
2. Draw the two-transistor model of SCR.
3. Define commutation.
4. State Fleming's left-hand rule.
5. List any two applications of 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 R triggering of an SCR.
2. Describe the structure and working of DIAC.
3. Describe TRIAC light dimming circuit.
4. Draw and explain single phase half bridge inverter.
5. Describe the working of an AC tachogenerator.
6. Compare AC and DC drives.
7. Describe speed control of 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 and explain RC triggering of SCR. (8)

(b) Describe the V-I characteristics of TRIAC. (7)

OR

IV. (a) Explain triggering of SCR using UJT. (8)

(b) With a neat circuit diagram, explain V-I characteristics of the power diode. (7)

UNIT - II

V. (a) Draw the circuit diagrams of single-phase half wave and bridge converters. (6)

(b) With a circuit diagram, describe the working of three phase bridge inverter. (9)

OR

VI. (a) With necessary sketches, describe single phase full wave mid-point converter. (9)

(b) Compare natural and forced commutation of SCR. (6)

UNIT - III

VII. (a) Explain the working of AC servomotor and list its applications. (9)

(b) Explain the working of stepper motor. (6)

OR

VIII. (a) Explain the working of single phase induction motor. (7)

(b) Explain the working of Universal motor. (8)

UNIT – IV

IX. (a) With the circuit diagram, describe the working of Jone's chopper. (8)

(b) With necessary sketches, describe the working of cyclo converter. (7)

OR

X. (a) With circuit diagrams, describe step up and step down chopper. (9)

(b) List the applications of chopper. (6)
