DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER - 2023

INDUSTRIAL ELECTRONICS & PLC

(Maximum Marks:100)   (Time: 3 Hours)

PART - A
(Maximum Mark : 10)

Marks

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

1. Define the term holding current of an SCR.

2. List any two applications of IGBTs.

3. Define Cycloconverter.

4. List any two methods of speed control of induction motors.

5. List any four advantages of PLC.   (5 x 2 = 10)

PART - B
(Maximum Mark: 30)

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

1. Describe two transistor analogy of SCR.

2. Describe turn on methods of SCR.

3. Explain the principles of chopper operation with diagram.

4. Describe series inverter with circuit diagram and waveforms.

5. Compare AC and DC drives.

6. Describe the principle of induction heating.

7. Describe about Ladder logic diagram.

(5 x 6 = 30)

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PART – C
(Maximum Mark: 60)
(Answer *one full* question from each unit. Each full question carries 15 marks.)

UNIT - I

III   (a) Draw output characteristics of power MOSFET and explain.   (8)

       (b) Explain the gate triggering method using RC.   (7)

OR

IV   (a) Describe Class B commutation using SCRs.   (8)

      (b) Draw the VI-characteristics of SCR and explain.   (7)

UNIT – II

V   (a) Explain the working of single phase full wave midpoint converter with R load.(8)

    (b) Describe the working of Jone's chopper with circuit diagram.   (7)

OR

VI   (a) Explain single phase to single phase step up cycloconverter with waveforms. (8)

    (b) Describe single phase dual converter with waveforms.   (7)

UNIT – III

VII   (a) Explain the speed control of series DC motors.   (8)

    (b) List the applications of Dielectric heating.   (7)

OR

VIII   (a) Describe spot and projection resistance welding.   (8)

    (b) Explain online UPS with block diagram.   (7)

UNIT – IV

IX   (a) Describe the architecture of PLC.   (10)

    (b) Describe Timer on delay (TON) used in ladder diagram.   (5)

OR

X   (a) Draw a ladder logic diagram of AND & OR gates.   (8)

    (b) List any 7 applications of PLC.   (7)

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