TED (15/19) - 5042
(REVISION-2015/19)

A24-6614

Reg.No……
Signature…….

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

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. Draw the two-transistor analogy of SCR.
2. State the difference between rectifier using diode and SCR.
3. List the name of four industrial heating methods.
4. What is PLC.
5. List the 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. Elaborate the working of class-D commutation with output waveforms and circuit diagram.
2. Describe turn on/triggering methods of SCR.
3. Write a short note on the working principle of single-phase half wave controlled converter with R load, draw the circuit diagram and output waveform.
4. Illustrate the working of Jone's choppers with circuit diagram.
5. Compare the operation of on-line and off-line UPS with diagrams.
6. Describe the principle of dielectric heating method.
7. Explain the working of PLC.

(5 x 6 = 30)

P.T.O

PART – C

(Maximum Mark: 60)

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

UNIT - I

III a) Describe the class-C commutation with output waveforms and circuit diagram. (8)

b) Explain the resistance triggering of SCR with circuit diagram and waveforms (with firing angle of 90º). (7)

OR

IV a) Explain the RC triggering of SCR with circuit diagram and waveforms (with firing angle greater than 90º). (8)

b) Elaborate the working of SCR with its output characteristics. (7)

UNIT – II

V a) Describe the operation of parallel inverter with circuit diagram and output waveform. (8)

b) Explain the working principle of series inverter with circuit diagram and output waveform. (7)

OR

VI a) Draw the circuit diagram, and output waveform of AC power controller using TRIAC, also explain its working principle. (8)

b) Explain the working principle of single-phase full wave bridge converter with RL load, draw the circuit diagram and output waveform. (7)

UNIT – III

VII a) Write a short note on the working of resistance welding and explain four types of resistance welding. (8)

b) Explain the principle, advantage, and applications of induction heating. (7)

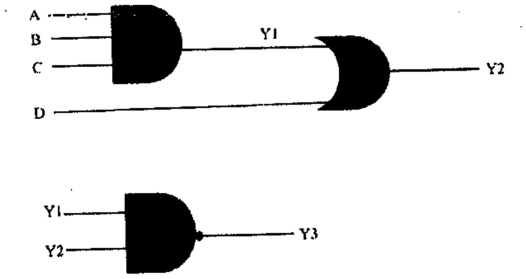
OR

VIII a) Describe stator voltage control, and rotor on off control of induction motor with necessary diagrams. (8)

b) Write a comparison between AC and DC drives. (7)

UNIT – IV

IX a) Write the PLC ladder Programme for the logic circuit shown below. (8)



b) Explain any real time application of PLC in detail. (7)

OR

X a) Write the PLC ladder Programme for 3 error alarms in MOTOR. (8)

b) Explain the architecture of PLC with a neat diagram. (7)

……..