DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2022

INDUSTRIAL AUTOMATION AND MECHATRONICS

[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 mechatronics.

2. Define the term automation.

3. Define the sensitivity of a sensor.

4. What do you mean by directional control valve?

5. Define PLC.   (5 x 2 = 10)

PART – B

Maximum marks : 30

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

1. Explain the different type's automation.

2. Describe the elements of closed loop control system.

3. Write short notes on proximity switches.

4. Explain briefly different types of temperature sensor.

5. Write short notes on simple ball 2/2 poppet valve.

6. Explain DCV with a neat sketch.

7. List the programming languages of PLC.   (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) Distinguish between Traditional and Mechatronics design.   (7)

(b) Discuss the measurement system with the help of a block diagram. (8)

OR

IV. (a) Distinguish open loop and closed loop control system. (8)

(b) Describe the elements of product design. (7)

UNIT-II

V. (a) Explain the working of eddy current proximity sensor with neat sketch. (8)

(b)With the help of a sketch explain the working principle of tachogenerator. (7)

OR

VI. (a) What are the factors to be considered when choosing sensors. (8)

(b) Explain the working of inductive proximity sensor with neat sketch. (7)

UNIT-III

VII.(a) Explain the components of a hydraulic system with the help of a neat sketch. (8)

(b) Explain the components of a pneumatic system with the help of a neat sketch. (7)

OR

VIII.(a) Explain the working of pilot operated check valve. (8)

(b) Write short notes on DC motors. (7)

UNIT-IV

IX. (a) Explain the working of a timer with the help of a ladder diagram. (8)

(b) Write short notes on PLC programming. (7)

OR

X. (a) List the Microprocessor and microcontroller applications (8)

(b) Make a comparison between Microprocessor and Microcontroller. (7)

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