TED (15) - 6025   Reg.No.............................
(Revision-2015)   Signature.........................

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/ COMMERCIAL PRACTICE   -   APRIL - 2022

INDUSTRIAL AUTOMATION AND MECHATRONICS

[Maximum marks: 100]   (Time: 3 Hours)

PART – A
(Maximum Marks: 10)

Marks

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

1. Name the basic elements of an automated system.

2. Define sensors and transducers.

3. Define sensitivity of a sensor

4. Define actuator.

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. Differentiate between traditional mechatronic designs.

2. Explain the working of an inductive proximity sensor with neat sketch.

3. What is a photo resister? Explain the applications of photo resister.

4. Explain the working of simple ball type 2/2 poppet valve.

5. Write short notes on bipolar junction transistor.

6. List the features of PLC.

7. Discuss the common hardware faults.   (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) List the advantages and disadvantages of automation.   (8)

(b) Compare open loop and closed loop control system.   (7)

OR

IV.   (a) Explain the major building blocks of mechatronic system with the help of a block
        diagram.   (8)

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(b) Explain the elements of mechatronics design procedure.   (7)

UNIT-II

V. (a) What is a tachogenerator? Explain the working with a neat sketch.   (8)

  (b) What are the factors to be considered when choosing sensors?   (7)

OR

VI. (a) Explain the working of an orifice plate and turbine meter with suitable sketches.   (8)

  (b) Explain the working of absolute encoder with a neat sketch.   (7)

UNIT-III

VII. (a) Sketch and explain the working of diaphragm operated process control valve.   (8)

  (b) Explain the working of pilot operated check valve.   (7)

OR

VIII. (a) With the help of a neat sketch explain the three phase variable reluctance DC
     stepper motor.   (8)

  (b) With the help of a neat sketch explain the double acting hydraulic cylinder sequence
    circuit.   (7)

UNIT-IV

IX. (a) Explain the working of shift register with the help of suitable sketches.   (8)

  (b) Explain input-output processing.   (7)

OR

X. (a) Make a comparison between Microprocessor and Microcontroller.   (8)

  (b) With the help of a neat sketch discuss the Bathroom scale and mechatronic solution
    of it.   (7)