

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE , APRIL – 2023**

**INDUSTRIAL AUTOMATION AND MECHATRONICS**

(Maximum Marks : 100)

(Time : 3 hours)

**PART – A**  
(Maximum Marks : 10)

Marks

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

1. Define automation.
2. What is reproducibility of a sensor?
3. State the use of orifice plate.
4. Name two solid state switches.
5. Define PLC.

(5x2=10)

**PART – B**  
(Maximum Marks : 30)

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

1. Explain different types of automation.
2. List four advantages and disadvantages of mechatronics.
3. Explain tachogenerator.
4. Explain with sketch a float sensor.
5. Explain spool valve.
6. Sketch the symbol of a 4/2 valve and give its details.
7. Explain the principles of timer.

(5x6=30)

**PART – C**

(Maximum Marks : 60)

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

**UNIT – I**

- III.** (a) Explain the basic elements of an automated system. (9)  
(b) Explain mechatronics product. (6)

**OR**

- IV.** (a) Explain the elements of a product design. (9)  
(b) Differentiate open loop and closed loop control system. (6)

**UNIT – II**

- V.** (a) Explain with sketch eddy current proximity sensors. (9)  
(b) List the factors to be considered while selecting a sensor. (6)

**OR**

- VI.** (a) Explain Bimetallic strip with sketch. (9)  
(b) Explain debouncing of mechanical switches. (6)

**UNIT – III**

- VII.** (a) Explain with sketch hydraulic power system. (9)  
(b) Explain a single vane semi rotary actuator with sketch. (6)

**OR**

- VIII.** (a) Explain the control of double acting cylinder with operation circuit. (9)  
(b) Explain the working of a DC motor. (6)

**UNIT – IV**

- IX.** (a) Explain the basic components of PLC with block diagram. (9)  
(b) Distinguish between microprocessor and micro controller. (6)

**OR**

- X.** (a) Describe the fault detection techniques in microprocessor. (9)  
(b) Explain the principles of bath room scale. (6)

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