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(Revision-2015)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL-2021

INDUSTRIAL AUTOMATION & MECHATRONICS

[Maximum marks: 75] (Time: 2.15 Hours)

PART – A

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

1. Define Automation
2. Define sensor and transducer
3. Write any two type of temperature sensors
4. What is a Flip Flop?
5. Write down any two programming language of PLC (3 x 2 =6)

PART – B

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

1. List out the advantages of automation
2. Explain the basic elements of the closed loop system
3. Differentiate between the hydraulic and pneumatic systems
4. Write short note on bouncing of mechanical switches
5. Illustrate the working of tacho generator
6. Explain the function of shift register
7. Write down the features of PLC (4 x 6= 24)

PART – C

(Answer **any of the three units** from the following. Each question carries 15 marks)

UNIT –I

III.(a) Explain different types of automation (8)

(b) Differentiate between traditional and mechatronic systems (7)

OR

IV. (a) Explain open loop and closed loop control system with a neat sketch (8)

(b) Draw the block diagram of general mechatronic system (7)

UNIT-II

V.(a) Explain the working of following sensors with a neat sketch

(1)Eddy current proximity sensor (2) Inductive proximity sensor (8)

(b) Write short note on Resistance temperature devices(RTDs) (7)

OR

VI.(a) Explain the working of incremental encoder with a neat sketch (8)

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

UNIT-III

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

(b) Explain the working of diaphragm operated process control valve (7)

OR

VIII.(a) Illustrate the working of AC and DC motors (8)

(b) Discuss the controlling of a single acting cylinder with a neat sketch (7)

UNIT-IV

IX. (a) With the help of a block diagram, explain the basic components of PLC (8)

(b) Explain Ladder diagram with the help of a suitable sketch (7)

OR

X.(a) Explain Microprocessor and micro controller with neat diagrams (8)

(b) Discuss the fault finding technique used with microprocessor based system (7)

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