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

ADVANCED PROCESS CONTROL

[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 a process.

2. What are data loggers?

3. Name any four commonly used PLC output devices.

4. List any two advantages of LabVIEW.

5. Define a fuzzy set.   (5x2=10)

PART – B
(Maximum Marks : 30)

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

1. Compare Batch process and continuous process.

2. List the role of alarm in process control.

3. Explain any 6 Ladder diagram instruction used in programming a PLC.

4. Draw the block diagram and list out the features of Centralised computer system.

5. Compare Text-based programming and graphical programming.

6. Mention the selection criteria of PLC.

7. What are P&ID symbols and draw P&ID symbols for Instrument Identification?

(5x6=30)

PART – C

(Maximum Marks : 60)

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

UNIT – I

III. (a) Describe compound variable process control with an example. (8)

(b) Describe the feed-forward control system with a suitable example. (7)

OR

IV. (a) Explain Cascade control system with a suitable example. (8)

(b) Explain Adaptive Control system with block diagram. (7)

UNIT – II

V. (a) Explain Direct Digital Control with a block diagram. (8)

(b) Describe Supervisory control with a suitable block diagram. (7)

OR

VI. (a) Explain Distributed Control system (DCS) with its architecture. (8)

(b) Explain Data acquisition system 1 with suitable Block Diagram. (7)

UNIT –III

VII. (a) Explain Relay logic control of the process with a suitable example. (8)

(b) Explain the block diagram of PLC. (7)

OR

VIII. (a) Explain the various components of SCADA with block diagram. (8)

(b) In a building when all lights are turned OFF, EXIT lights will be ON for another 60 s, Draw a Ladder diagram program for the above problem. (7)

UNIT – IV

IX. (a) Explain Intelligent control and mention its features. (8)

(b) Explain the block diagram of Fuzzy Controller. (7)

OR

X. (a) Explain the role of hardware and software in Virtual Instrumentation. (8)

(b) Describe graphical system design using LabVIEW. (7)

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