TED (15/19) 6211
(Revision-2015/19)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2025

ADVANCED PROCESS CONTROL

[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. Give the benefits of implementing adaptive control in process control systems.
2. What is a data acquisition system?
3. Write any four commonly used PLC input devices.
4. List any 4 line symbols used in P&I Diagram.
5. What are crisp sets? (5 x 2 = 10)

PART – B
Maximum marks: 30

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

1. Compare Continuous and Batch control process.
2. List the role of alarm in process control.
3. Describe different modes of operation of PLC.
4. List out the advantages of Lab VIEW.
5. Mention the application of PLC in Industrial Automation.
6. List advantages & disadvantages of DCS.
7. Explain about Split range control with an example. (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) Explain about Ineractive variable process control with example. (8)

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

OR

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

(b) Illustrate the Compound Variable control system with an example. (7)

UNIT - II

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

(b) Describe Data loggers with a suitable block diagram. (7)

OR

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

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

UNIT - III

VII. (a) Explain the architecture of PLC with a block diagram. (8)

(b) Design a ladder diagram for the given problem, When the start button is pressed ON heater ON and the cooling fan is ON? When the heater is switched OFF cooling fan runs for another 60s? (7)

OR

VIII. (a) Describe Input module of PLC with diagram. (8)

(b) Explain various components of SCADA with a block diagram. (7)

UNIT – IV

IX. (a) Explain intelligent control with a block diagram, Mention its features. (8)

(b) Describe the open loop method of controller tuning. (7)

OR

X. (a) Illustrate the block diagram of the Fuzzy Controller. (8)

(b) Compare Text-based programming and graphical programming. (7)
