

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

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. Define a process.
2. What is a comparator?
3. Write any four commonly used PLC input devices.
4. Write any four advantages of LABVIEW.
5. What is a crisp set?

(5 x 2 = 10)

PART – B

Maximum marks : 30

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

1. Distinguish between continuous and batch process.
2. List the role of alarms in process control.
3. Write the advantages of PLC.
4. What is Piping and Instrumentation Diagram. Draw the balloon symbols used in process control.
5. Write the features of intelligent control.
6. Distinguish between feedback and feed forward control.
7. Write the selection criteria of PLC.

(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 cascade control with suitable example.

(8)

(b) Explain compound variable process control with example. (7)

OR

IV. (a) Explain ratio control with block diagram. Give any two application. (8)

(b) Explain split range control system with a suitable example. (7)

UNIT-II

V. (a) Explain supervisory control with suitable block diagram. (7)

(b) Explain Direct Digital Control with block diagram. (8)

OR

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

(b) Explain Data Acquisition System with block diagram (7)

UNIT-III

VII.(a) Explain the architecture of PLC. (7)

(b) Explain the different methods of programming PLC. (8)

OR

VIII.(a) Explain SCADA with block diagram. (8)

(b) An electric oven is heated by a heater. Ventilation motors drive the cooling fan.

Draw ladder diagram for the given operation. When the start button is on heater and cooling fans turned on. Simultaneously. The cooling fan has to run for some time

after the heater is turned off. (7)

UNIT-IV

IX.(a) Explain Zeigler Nichols method of control loop tuning. (8)

(b) Explain Fussy controller with a block diagram. (7)

OR

X. (a) What is virtual instrumentation? Differentiate virtual and traditional instrumentation.

List the advantages of virtual instrumentation (8)

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