

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

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 Manipulated variable.
2. State offset.
3. Interpret the term Integral Time.
4. Define rangeability of control valve.
5. Define telemetry.

(5 x 2 = 10)

PART – B

Maximum marks: 30

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

1. Describe human aided control with example.
2. Compare P, PI, PD & PID Control Modes.
3. Describe two position controller mode.
4. Illustrate electronic error detector.
5. Explain pneumatic actuator with figure.
6. Explain Position Telemetry system.
7. List the benefits of HART communication protocol.

(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 the Elements of Process Control Loop. (8)
- (b) Describe Pressure Process Control system with example. (7)

OR

- IV.** (a) Explain Flow Process Control system with figure. (8)
(b) Describe Process Characteristics. (7)

UNIT - II

- V.** (a) With diagram describe Proportional Integral Derivative (PID) Control Mode. (8)
(b) Briefly describe Electronic PI Control mode. (7)

OR

- VI.** (a) Briefly explain Pneumatic Proportional Controller. (8)
(b) Explain Derivative Control Mode. (7)

UNIT - III

- VII.** (a) Explain the working of Pneumatic Actuator. (8)
(b) Explain the working of Air Pressure Regulator. (7)

OR

- VIII.** (a) Explain the operation of I/P Converter. (8)
(b) Explain cavitation and flashing in control valve. (7)

UNIT – IV

- IX.** (a) Explain the operation of Motion Balance Current Telemetry system. (8)
(b) Explain the Profibus Communication Standard. (7)

OR

- X.** (a) Describe Functional elements of Foundation Field Bus. (8)
(b) Explain the working of HART Communication. (7)
