

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2022**

PROCESS CONTROL

[Maximum Marks: 100]

[Time: 3 Hours]

PART-A

(Maximum Marks: 10)

I. (Answer *all* questions in one or two sentences. Each question carries 2 marks)

1. Define controlled variable.
2. State the term offset.
3. Define Cv factor.
4. Define Rangeability of a control valve.
5. State the term 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 the block diagram of process control.
2. Explain self regulation with an example.
3. Describe proportional control mode.
4. Explain the working of flapper nozzle system.
5. Describe the working of hydraulic actuator.
6. Describe the need of a valve positioner.
7. Describe the block diagram of general telemetry system.

(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 automatic control with an example. (8)
- (b) Describe about process equation with an example. (7)

OR

- IV. (a) Explain about control system parameters. (8)
(b) Describe pressure process control system. (7)

UNIT – II

- V. (a) Describe the implementation of pneumatic PI controller. (7)
(b) Explain the implementation of electronic PID controller. (8)

OR

- VI. (a) Explain the implementation of pneumatic PID controller. (8)
(b) Describe the implementation of electronic PI controller. (7)

UNIT- III

- VII. (a) Describe about inherent flow characteristics of control valve. (10)
(b) Define the term cavitation and flashing. (5)

OR

- VIII. (a) Explain the block diagram of final control operation. (7)
(b) Describe the working of pneumatic actuator. (8)

UNIT - IV

- IX. (a) Describe voltage telemetry system. (7)
(b) Describe motion balance current telemetry system. (8)

OR

- X. (a) Describe about field bus. (7)
(b) Explain different layers in HART specification. (8)
