

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER-2021**

PROCESS CONTROL

[Maximum marks: 75]

(Time: 2.15 Hours)

PART – A

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

1. Define error in process control.
2. What is proportional band?
3. Define valve coefficient.
4. List any two advantages of fieldbus.
5. Define the term telemetry.

(3 x 2 = 6)

PART – B

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

1. Explain human aided process control with an example.
2. Describe flow process control system with the help of neat diagram.
3. Explain proportional mode with the help of neat diagram.
4. Derivative control mode is not used alone, comment.
5. Explain the block diagram of final control operation.
6. Describe control valve sizing procedure.
7. Describe the block diagram of general telemetry system.

(4 x 6 = 24)

PART – C

(Answer **any of the three units** from the following. Each full question carries 15 marks)

UNIT – I

III. (a) Identify the process variables in a temperature process control system and explain. (8)

(b) Describe the block diagram of automatic process control system. (7)

OR

IV.(a) Explain automatic level control system. Identify process variables. (8)

(b) Describe self regulation with a neat diagram. (7)

UNIT-II

V. (a) Explain variation of controller output with error, for a two position control mode. (8)

(b) Describe flapper-nozzle system. (7)

OR

VI.(a) Explain the pneumatic implementation of proportional controller. (9)

(b) Explain electronic implementation of error detector, using Op-amps. (6)

UNIT-III

VII.(a) What is meant by inherent flow characteristics of valves? Explain classification of valves as per the inherent flow characteristics (8)

(b) Describe working principle of I/P converter. (7)

OR

VIII.(a) Explain working principle of a pneumatic valve positioner. (9)

(b) Describe construction and working of a ball valve with a neat diagram. (6)

UNIT-IV

IX. (a) Describe the block diagram of HART. (8)

(b) Explain position telemetry system with the help of neat diagram. (7)

OR

X. (a) Explain functional elements in foundation fieldbus. (8)

(b) Illustrate force balance current telemetry system (7)
