TED (15) – 5212
(Revision – 2015)

A23 - 07744

Reg.No……..
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE , APRIL – 2023

PROCESS CONTROL

(Maximum Marks : 100) (Time : 3 hours)

PART – A
(Maximum Marks : 10)

Marks

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

1. Distinguish between controlled variable and manipulated variable.
2. Define proportional band.
3. Define control valve Rangeability and Turn down ratio.
4. State the role of field bus in industry.
5. Define dead time in control system.

(5x2=10)

PART – B
(Maximum Marks : 30)

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

1. The range 20℃ to 120℃ of a temperature transmitter is linearly converted to the standard current range of 4 to 20 mA. What current will result from 66℃ ? What temperature does 6.5 mA represent?
2. Describe flapper-nozzle system with neat diagram.
3. Describe the flow characteristics of control valves.
4. Write short notes on profibus.
5. Describe the working principle and application of booster relay.
6. Compare P, PI, PD and PID Control modes.
7. Explain self regulation process with example.

(5x6=30)

PART – C

(Maximum Marks : 60)

(Answer **one full** question from each unit. Each full question carries 15 marks)

UNIT – I

III. (a) With a neat block diagram describe the elements of process control loop. (9)

(b) Define Process equation, Process Load and Process Lag. (6)

OR

IV. (a) Describe Flow process control system and identify process parameters. (7)

(b) Explain temperature process control system and formulate the process equation. (8)

UNIT – II

V. (a) Explain the implementation of electronic PID controller. (9)

(b) Explain the implementation of electronic error detector. (6)

OR

VI. (a) Explain the implementation of pneumatic PI controller. (8)

(b) With neat diagram explain the working of on-off controller. Mention its draw backs. (7)

UNIT –III

VII. (a) With suitable diagrams explain the working of hydraulic actuators. (8)

(b) Describe the working of solenoid valve with diagrams. (7)

OR

VIII. (a) Explain air to open and air to close control valves in detail. (8)

(b) Explain cavitation and flashing. (7)

UNIT – IV

IX. (a) Describe HART digital communication in detail. (10)

(b) Explain the advantages of field bus. (5)

OR

X. (a) Illustrate Voltage Telemetry System. (8)

(b) Explain Current Telemetry System. (7)

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