TED (15/19) 5212
(Revision – 2015/19)

1503240332

Reg. No……
Signature …….

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2024

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 the term error.
2. List any two Process characteristics.
3. Define offset error.
4. Define control valve coefficient.
5. Define 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. Draw a human aided control system and an automatic control system.
2. Define Process, dead Time and Cycling.
3. Explain on- off control Mode.
4. Draw and explain the error detector circuit using Op –amp.
5. Differentiate between air to open and air to close control valves.
6. Draw and explain the force balance telemetry system.
7. What are the benefits of using 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 block diagram of process control. (8)

b. Describe the flow process control system. (7)

OR

IV. a. Explain the concept of self regulation with an example. (8)

b. Explain a Temperature process control system. (7)

UNIT – II

V. a. Implement PID controller using Op-amp. (8)

b. Explain the three position control mode. (7)

OR

VI. a. Write the analytical expression for PI controller. Implement the PI controller electronically. (8)

b. Explain Pneumatic Proportional controller. (7)

UNIT- III

VII. a. Explain the inherent flow characteristics. (8)

b. Explain the working of Butterfly valve. (7)

OR

VIII. a. Explain the operation of Pneumatic actuator. (8)

b. Describe the control valve cavitation and flashing. (7)

UNIT - IV

IX. a. Describe the general telemetry system with block diagram. (8)

b. Draw and explain the current telemetry system. (7)

OR

X. a. Describe the working of voltage telemetry system. (8)

b. Explain Profibus. What are the features of it? (7)

****