



C20-AEI-404

7416

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DAEI – FOURTH SEMESTER EXAMINATION

PROCESS CONTROL

Time : 3 Hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define continuous process.
2. Define the term process.
3. Define the term dead time.
4. List any three advantages of PID controller.
5. Draw the diagram of sliding stem control valve.
6. State the principle of pressure to electric converter.
7. Define multi variable control system.
8. List any three applications of cascade control system.
9. Define piping and instrumentation diagram.
10. Draw the symbols for the following control valves :
 - (a) Hydraulically operated control valve
 - (b) Pneumatically operated control valve
 - (c) Electrically operated control valve

PART—B

8×5=40

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Explain the development of automatic process control with example. 8

(OR)

(b) Explain each element in process control loop with a block diagram. 8

12. (a) (i) Explain integral control mode with a diagram. 4

(ii) List the characteristics of integral control mode. 4

(OR)

(b) (i) Explain the derivative control mode with a diagram. 4

(ii) List the characteristics of derivative control mode. 4

13. (a) Explain the principle of operation of solenoid valve actuator with a diagram. 8

(OR)

(b) Explain the construction of control valve with a diagram. 8

14. (a) (i) Justify how cascade control system is better than single loop control system with example. 5

(ii) List any three applications of adaptive control system. 3

(OR)

(b) (i) Distinguish between feedback and feed forward control systems. 5

(ii) List any three applications of ratio control system. 3

15. (a) Explain ISI and ANSI standards used in instrumentation. 8

(OR)

(b) Explain BS and DIN standards used in instrumentation. 8

PART—C

10×1=10

- Instructions :** (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 16.** A hydraulic actuator is used to move a work piece by 50 mm in 10 seconds. If the piston diameter is 100 mm, find the hydraulic liquid flow rate. Explain the principle of operation with a diagram.

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