



C14-AEI-502

4608

BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2017
DAEIE—FIFTH 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. Draw the block diagram of a process control loop.
2. List the discontinuous control modes.
3. Define the terms 'proportional band' and 'offset'.
4. State the need for tuning of PID controllers.
5. Draw the block diagram of final control operation.
6. List the different types of actuators.
7. State the need for electric to pressure converters.
8. Distinguish between feedback and feed-forward control systems in any three aspects.
9. List any three applications of cascade control system.
10. Define piping and instrumentation diagram.

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PART—B

10×5=50

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

11. Define and explain controlled variable and manipulated variable with an example.

- 12.** (a) Describe the proportional-integral control mode.
(b) List the advantages and disadvantages of PI controller.

13. Define the following characteristics of process :

- (a) Process load
(b) Error
(c) Self-regulation
(d) Dead time
(e) Cycling

14. Draw and explain the flow-lift characteristics of quick opening, linear and equal percentage control valves.

- 15.** (a) Explain the basic principle of Nozzle-Flapper system with its diagram.
(b) Explain the principle of hydraulic actuator with diagram.

16. Explain the operation of ratio control with diagram.

17. Justify how the cascade control system is better than single loop control system with an example.

18. (a) List the different standards used in instrumentation and explain any one of them. 6

- (b) Draw the symbols for the following : 4
(i) Fluid pressure line
(ii) Temperature transmitter
(iii) Gate valve
(iv) Instrument at locally mounted
