



C09-AEI-406

3416

BOARD DIPLOMA EXAMINATION, (C-09)
OCT/NOV—2014
DAEIE—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.

1. Define batch process and continuous process.
2. Define proportion band and offset.
3. Define integral control mode.
4. State the need for pressure to electric converter.
5. List the types of control valves.
6. List the applications of ratio controller.
7. Define adaptive control.
8. List the applications of cascade controller.
9. List different types of standards used in instrumentation.
10. Define P&I diagrams.

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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.** Draw the block diagram of process control loop. Describe each element in process control loop. 4+6
- 12.** Explain the following methods of tuning of PID controller : 3+7
(a) Ultimate gain method
(b) Process reaction curve method
- 13.** Explain two-position and multiposition control modes. 5+5
- 14.** Explain the implementation of PID control using op-amp. 5+5
- 15.** (a) Draw and explain the block diagram of hydraulic actuator. 8
(b) List the types of plugs. 2
- 16.** Explain the following types of control valves : 2+4+4
(a) Linear
(b) Quick opening
(c) Equal percentage
- 17.** Draw and explain the block diagram of feedforward control system. 10

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- * **18.** (a) Draw the line diagrams of the following : 7
- (i) Electric line
 - (ii) Pneumatic line
 - (iii) Hydraulic line
 - (iv) Capillary line
 - (v) Process line
 - (vi) EM or sonic signal
 - (vii) Fluid pressure line
- (b) What is a balloon symbol? Give an example. 3
