



C14-AEI-502

4608

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2018**  
**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. Define the terms 'process' and 'process control'.
2. Define the terms 'error' and 'self-regulation'.
3. State the need for tuning of PID controllers.
4. Define proportional control mode.
5. State the need for pressure to electric converters.
6. List the different types of actuator.
7. Draw the flow-lift characteristics of quick opening, linear, equal percentage control valves.
8. List any three applications of ratio control system.
9. Draw the block diagram of cascade control system.

\* **10.** Draw the symbols for the following :

(a) Capillary tube

(b) Level controller

(c) Pneumatically-operated control valve

**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 a process control loop and describe each element in it.

**12.** Explain the ultimate gain method for tuning of PID controllers.

**13.** (a) Explain the characteristics of derivative control mode. 5

(b) Explain the two-position control mode of controller. 5

**14.** Explain the principle of operation of electric to pressure converters.

**15.** Explain the operation of electrical solenoid valve actuator with its diagram.

**16.** Draw and explain the block diagram of feed forward control system.

**17.** (a) Explain self-adaptive control system with block diagram. 8

(b) List any two applications of adaptive control system. 2

**18.** Explain the following standards used in instrumentation : 5+5

(a) ANSI

(b) ISA

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