



C14-AEI-502

4608

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**SEPTEMBER/OCTOBER - 2020**  
**DAEIE—FIFTH SEMESTER EXAMINATION**  
**PROCESS CONTROL**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**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 controlled variable.
2. Define the term 'cycling'.
3. Define proportional band.
4. Define self-regulation.
5. State the need for pneumatic to electric converter.
6. Draw the diagram of stepper motor actuator.
7. List the different types of actuators.
8. Define compound variable control system.

- \* 9. Define adaptive control.
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**

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. Explain the development of automatic process control with example.
12. Explain the tuning PID controller using process reaction curve method.
13. Explain the integral control mode with diagram and list its characteristics.
14. Explain the basic principle of Nozzle-Flapper system with a diagram.
15. Explain the principle of electropneumatic actuator with diagram.
16. Explain the ratio control system with block diagram.
17. Explain the feed forward control system with block diagram.
- \* 18. Explain the following standards used in instrumentation :
- (a) ISA
  - (b) DIN

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