

**6415**  
**BOARD DIPLOMA EXAMINATION**  
**JUNE - 2019**

\* **DIPLOMA IN APPLIED ELECTRONICS AND INSTRUMENTATION**  
**PROCESS CONTROL**  
**FOURTH SEMESTER EXAMINATION**

**Time: 3 Hours**

**Total Marks: 80**

**PART - A (3m x 10 = 30m)**

*Note 1: Answer all questions and each question carries 3 marks*

*2: Answers should be brief and straight to the point and shall not exceed 5 simple sentences*

1. Draw the block diagram of a process control loop
2. Define error and dead time
3. List three advantages of PID controllers
4. List two characteristics of derivative control mode
5. List the types of electrical actuators
6. Draw the diagram of Flow – lift characteristics of control valves such as Quick opening, Linear and Equal percentage valves
7. State the Principle of final control operation
8. List three applications of Ratio control system
9. Define multivariable control system
10. Draw the following line diagrams
  - a) Electromagnetic signal.
  - b) Mechanical link.
  - c) Orifice installed line.

**PART - B (10m x 5 = 50m)**

*Note 1: Answer any five questions and each carries 10 marks*

*2: The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer*

- \* 11. Explain controlled variable and manipulated variable with an example
12. Explain the Proportional-Integral Control mode and List the composite control modes
13. Explain the process reactive curve method for tuning of PID controllers.
14. Explain the principle of Pneumatic Actuator with diagram.

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15. Explain the basic principle of Nozzle- Flapper system with diagram.
16. Explain the feed forward control system with an example
17. Explain programmed adaptive control system with diagram.
18. Explain the following standards used in Instrumentation.
  - a) ISI
  - b) ISA

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A.A.N.M & V.V.R.S.R POLYTECHNIC , GUDLAVALLERU , KRISHNA