

August 2021

**AUTOMATION SOLUTION***Time Allowed: 1 Hour**Full Marks: 35***Answer to Question No. 1 is compulsory and Answer any two questions from the rest.**

1. A. State whether the following statements are True or False: 6x2
- i) D-action is used in controllers for offset nulling.
  - ii) For ON-OFF control gain reaches infinity.
  - iii) Data communication between controllers and data highway in DCS obeys TCP/IP protocol.
  - iv) I-action in controller is the integration of control signal.
  - v) D-action is called anticipatory action.
  - vi) Bit shifting logic used in bottling plant.
- B. Answer the following questions: 2x4
- i) Mention any two PLC characteristics.
  - ii) Mention two safety rules while installation of PLC.
2. Draw block diagram of a PID controller. Describe in brief, the I-action and D-action. 3.5+2+2
3. Draw the functional block diagram of a PLC. Explain the blocks in brief. 3+4.5
4. Write short notes on the followings: 2.5x3
- a) Process module
  - b) Memory module
  - c) I/O module
5. Write in brief, the following units of a DCS architecture: 2.5x3
- a) Process unit
  - b) Display unit
  - c) Data highway
6. Give a classification of NC system. 7.5
7. Explain the Cartesian co-ordinate system of a Robot. 7.5
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