

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

**INDUSTRIAL AUTOMATION & CONTROL**

(Electrical &amp; Electronics Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- Give any two applications of thermopiles.
  - Write any two applications of thermocouples
  - List out any two applications of ratio control.
  - Draw the schematic diagram of ratio control scheme.
  - Define logic control.
  - Write any two differences between logic control and analog control.
  - List out the types of pneumatic actuator.
  - Give the applications of hydraulic actuator.
  - Write any two applications of induction motor drives.
  - Write any two applications of synchronous motor drives.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 (a) Explain the functional configuration of a typical sensor system.  
(b) Draw and explain the block diagram of typical industrial control system.

**OR**

- 3 (a) Explain the construction and principle of operation of a Bourdon tube pressure gage.  
(b) Narrate different methods of force measurement.

**UNIT – II**

4 Explain the following:

- Cascade control.
- Overriding control.

**OR**

- 5 (a) What is Predictive control?  
(b) Explain the applications of PID controller.

**UNIT – III**

- 6 (a) Give the structure of relay ladder logic programs for PLCs.  
(b) Explain the applications of PLCs.

**OR**

- 7 (a) Draw and explain the conventional PLC architecture.  
(b) Explain about sequence control in hardware environment.

**UNIT – IV**

- 8 (a) Give the classification of hydraulic actuators.  
(b) Explain the flow path of hydraulic actuator.

**OR**

- 9 (a) What are the various types of hydraulic cylinders?  
(b) What is field bus? Explain about field bus communication protocol.

**UNIT – V**

10 Give the operation and characteristics of step motor drives.

11 Give the operation and characteristics of DC motor drives.

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