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

INDUSTRIAL AUTOMATION & CONTROL

(Electrical & 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)
- (a) Give any two applications of thermopiles.
- (b) Write any two applications of thermocouples
- (c) List out any two applications of ratio control.
- (d) Draw the schematic diagram of ratio control scheme.
- (e) Define logic control.
- (f) Write any two differences between logic control and analog control.
- (g) List out the types of pneumatic actuator.
- (h) Give the applications of hydraulic actuator.
- (i) Write any two applications of induction motor drives.
- (j) 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:
- (a) Cascade control.
- (b) 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.

OR

11   Give the operation and characteristics of DC motor drives.

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