(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2995   Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

B.Tech.
(SEM. VII) ODD SEMESTER THEORY
EXAMINATION 2012-13
INDUSTRIAL AUTOMATION-I

Time : 3 Hours   Total Marks : 100

Note :– Attempt **all** questions.

1. Attempt any **four** of the following :   (5×4=20)

   (a) Differentiate between Mechanization & Automation.

   (b) What are the strategies for automation ?

   (c) Discuss why automation is required in industry. Give suitable example.

   (d) Explain, in brief, types of automation that can be used in a production system.

   (e) Identify major socio-economic considerations favouring automation.

2. Attempt any **four** of the following :   (5×4=20)

   (a) Compare hard automation with soft automation.

   (b) What are the advantages of flexible automation ?

   (c) Distinguish between discrete control and continuous control of industrial process.

(d) Discuss architecture of Programmable Automation Controller with the help of schematic diagram.

(e) Draw the electrical circuit along with Ladder Logic representing following logic gates;

    (i)   AND

    (ii) OR

    (iii) NOT

    (iv) NAND

3. Attempt any **two** of the following :   **(10×2=20)**

(a) Compare Programmable Automation Controller with Programmable Logic Controller. What are the key advantages of Programmable Automation Controller ?

(b) Discuss about memory management and communication system of Programmable Automation Controller.

(c) Explain the process of scanning the ladder diagram in a PLC from input scan till output scan.

4. Attempt any **two** of the following :   **(10×2=20)**

(a) Write short notes on the following :

    (i)   Sequential function chart.

    (ii) Functional block diagram.

(b) With the help of suitable example of ladder logic, explain the concept of latching.

(c) Draw the ladder logic for the following conditions :

    (i) A conveyor belt transporting bottled products to packaging where a deflector plate is activated to deflect bottles into a reject bin if either the weight is not within certain tolerances or there is no cap on the bottle.

    (ii) A light that comes on when it becomes dark, i.e., when there is no light input to the light sensor there is an output.

5. Attempt any **two** of the following :   **(10×2=20)**

  (a) Discuss the importance of SCADA in current scenario of industrial modernization. What are the sub-systems of SCADA ?

  (b) What are the advantages and applications of HMI ?

  (c) What is the significance of data acquisition and why it is important to secure global database ?