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EOE076

(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.

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(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.

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(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 ?