[4959] - 1090

B.E. (E & Tc)

PLC's and Automation

(Elective - II) (2012 Course)

Time :2½ Hours]   *[Max. Marks :70*

Instructions to the candidates:-

    1)   *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.*

    2)   *Neat diagrams must be drawn wherever necessary.*

    3)   *Figures to the right side indicate full marks.*

    4)   *Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*

    5)   *Assume Suitable data if necessary*

Q1) a)   Explain different process control principles.   **[4]**

     b)   Explain role of automation in modern developments.   **[4]**

OR

Q2) Explain different approaches to design digital control systems.   **[8]**

Q3) A sensor output voltage ranging from - 2.4 volts to –1.11 volts. To interface it to an analog to digital converter, this needs to be 0 to 2.5 volts. Develop the signal conditioning circuit.   **[6]**

OR

Q4) Discuss the typical issues & guidelines for analog signal conditioning design.**[6]**

Q5) List and explain different types of switches.   **[6]**

OR

Q6) Explain programmable automation controller [PAC]   **[6]**

Q7) a)   Draw and explain block diagram for elevator system. Develop the ladder diagram for the same.   **[10]**

P.T.O.

b) Write a short note on : **[8]**

   i)   MIS

   ii) MES

<center>OR</center>

Q8) a) Define the term HMI. Explain its application in automation. **[6]**

   b) Define the term PLC. Explain its typical specifications. **[6]**

   c) Draw the ladder diagram for the following sequence : **[6]**

   i)   If push button PB1 is pressed the red light turns ON.

   ii) If push button PB 2 is pressed, the green light turns ON.

   iii) If both the bush buttons [PB1 & PB2] are pressed at once, neither light turns ON

Q9) a) Explain functions of various elements used in SCADA system. **[8]**

   b) Draw and explain block diagram of distributed control system. **[8]**

<center>OR</center>

Q10) a) Define the term SCADA. Explain various features of SCADA system.**[8]**

   b) What factors makes DCS different from other control systems? Justify.**[8]**

Q11) a) List the applications of CNC machines in manufacturing Industry. Explain any one in detail **[8]**

   b) Write a short note on : **[8]**

   i)   Ethernet

   ii) TCP/IP

<center>OR</center>

Q12) a) What are the different media used to input information for NC machines? Discuss the advantages of each medium **[8]**

   b) Write a short note on : **[8]**

   i)   control net.

   ii) FF - HSE.

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