PA-925

[5927]-357

B.E. (Electrical)
PLC AND SCADA
(2019 Pattern) (Semester - VII) (Elective - III) (403143A)

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.*

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

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

    4)   *Assume suitable data, if necessary.*

Q1) a)   Explain the rules for proper construction of ladder diagram?   **[9]**

    b)   Draw ladder diagram, I_1, I_2 = Input & Q_1, Q_2, Q_3, Q_4 = outputs.   **[8]**

I_1	I_2	Q_1	Q_2	Q_3	Q_4
0	0	1	1	1	0
0	1	0	1	1	1
1	0	1	0	1	1
1	1	1	1	0	1

OR

Q2) a)   Explain ON delay timer in detail along with its timing diagram.   **[9]**

    b)   Three Motors are being controlled using three separate timers, each motor will remain ON for 10 sec. After every 10 sec, previous motor stops and the next motor becomes ON. This will continue in a cycle. Switch I_1 is used to start and I_2 is used to stop the cycle. Following table explains the function.   **[8]**

Input Switches - I_1 and I_2

Outputs-Motors M_1, M_2 and M_3

$I_1 = 1$ and $I_2 = 0$	Timer	Time	M_1	M_2	M_3
----	T_1	10 sec	1	0	0
----	T_2	10 sec	0	1	0
----	T_3	10 sec	0	0	1
$I_1 = 0$ and $I_2 = 1$	----	----	0	0	0

Q3) a) Explain simple closed loop systems with Block Diagram. **[9]**

b) Explain Temperature Control using PLC with the help of block diagram.
[9]

OR

Q4) a) Explain "Adjust and Observe" method of PID tunning. **[9]**

b) Explain analog Signal Processing. Assume input 0 to 80 V AC, input module 0 to 5 V DC, 8 bit base. How 31 V AC is converted and scaled up to CPU Input Register. **[9]**

Q5) a) State and explain different features of SCADA systems. **[9]**

b) Explain three SCADA Generations. **[9]**

OR

Q6) a) Draw and explain block diagram of SCADA. **[9]**

b) Explain automatic substation control through SCADA system. **[9]**

Q7) a) Explain Open systems interconnection (OSI) Model. **[9]**

b) What are Features, Advantage & Applications of DCS? **[8]**

OR

Q8) a) Explain Distributed Control system with neat and labelled diagram. **[9]**

b) Differentiate between PLC and DCS. **[8]**

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