

Total No. of Questions : 4]

SEAT No. :

P5215

[Total No. of Pages : 1

[6188] 168

B.E. (Electrical Engineering) (Insem)

PLC & SCADA

(2019 Pattern) (Semester - VII) (Elective - III) (403143 A)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Solve Q.1 or Q.2 ; Q.3 or Q.4.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable additional data, if necessary.
- 5) Use of non-programmable calculator is allowed.

Q1) a) State & explain advantages & disadvantages of PLC in details? [7]

b) Draw & explain Block diagram of PLC in details? [8]

OR

Q2) a) Write and explain a selection criterion of PLC? (7-Point) [7]

b) Define PLC and explain how it is helpful in automation and its types?[8]

Q3) a) State & explain any two output analog devices in details? [7]

b) State types of temperature sensor & explain any one temperature sensors in details? [8]

OR

Q4) a) What are different types of actuators? Explain any one of them in details? [7]

b) What is encoder & explain any one type of encoder in details? [8]



Total No. of Questions : 8]

SEAT No. :

P569

[Total No. of Pages : 2

[6004]-505

B.E. (Electrical)

PLC AND SCADA

(2019 Pattern) (Semester - VII) (Elective - III) (403143(A))

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 diagram must be drawn wherever it is necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.

Q1) a) Explain rules of ladder diagram. **[8]**

b) Construct a ladder diagram for Bottle filling plant. **[9]**

OR

Q2) a) Draw ladder diagram for following functional table I1, I2-Inputs C1, C2-Outputs. **[8]**

I1	I2	C1	C2
0	0	1	0
0	1	0	1
1	0	0	1
1	1	1	0

b) Construct a ladder diagram for any one of the following industrial applications. **[9]**

- i) ON/OFF Temperature Control.
- ii) Elevator Control.

Q3) a) Draw and Explain AC Motor starter. **[9]**

b) Discuss various methods of PID tuning. Select one of them and explain. **[9]**

OR

Q4) a) Explain with necessary diagram overload protection of AC Motor. **[9]**

b) List various speed control method of DC motor. Explain any one method in brief. **[9]**

Q5) a) Define SCADA. State applications of SCADA. Write desirable properties of SCADA. **[8]**

b) Explain how SCADA system is used in Petroleum Refining Process. **[9]**

OR

P.T.O.

- Q6)** a) Explain how SCADA system is used in Automatic Substation Control. [9]
b) Explain generations of SCADA Architectures. [8]

- Q7)** a) What are seven layers of OSI model explain each with function and associated protocol. [9]
b) Write note on CIP Protocol. [9]

OR

- Q8)** a) Make list of SCADA protocols and Explain Device Net in detail. [9]
b) Explain DCS architecture in detail. [9]

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Total No. of Questions : 8]

SEAT No. :

PA-925

[Total No. of Pages : 2

[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

P.T.O.

- 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 tuning. [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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Total No. of Questions : 4]

SEAT No. :

P8483

[Total No. of Pages : 1

OCT.22/BE/Insem-69

B.E. (Electrical) (Semester - VII)

PLC AND SCADA

(2019 Pattern) (403143 A) (Elective - III)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q. 1 or Q. 2, Q. 3 or Q. 4.
- 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 benefits of Automation. [5]
b) State various advantages and disadvantages of PLC. [5]
c) List the features of PLC also explain in detail CPU and Power Supplies. [5]

OR

- Q2) a) What is necessity of PLC? Also mention some of the leading manufactures of PLC. [5]
b) Draw the block diagram of a PLC showing the main functional items and explain the functions of each block. [5]
c) Explain how to select PLC for particular application. [5]

- Q3) a) Draw the block diagram of an analog input module and explain the parts. [7]
b) Compare of Hydraulic, Pneumatic and Electrical actuators. [8]

OR

- Q4) a) What are different types of sensors? Explain construction and working of any one temperature sensor with a diagram. [7]
b) Explain following two different types of encoders [8]
i) Incremental
ii) Absolute

