

Total No. of Questions : 8]

SEAT No. :

PC2393

[6354]-510

[Total No. of Pages : 2

B.E. (Electrical Engineering)

PLC AND SCADA

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

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 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) Draw ladder diagram for following logic gates; [4]

- i) EXOR Gate
- ii) EXNOR Gate

- b) Explain Off Delay timer (Toff) in detail along with its status bits operation, working, diagram and timing diagram. [6]
- c) Draw and explain the ladder diagram for bottle filling plant. [8]

OR

Q2) a) Explain latching (OTL) and unlatching (OTU) instruction in detail with the example. [4]

- b) Write the rules that needs to be followed while drawing the ladder diagram? [6]
- c) Draw and explain the ladder diagram for car parking. [8]

Q3) a) Write the role of PID controller in automation. [3]

- b) Explain analog PLC operation and PLC analog signal processing in detail. [6]
- c) Explain tank level controller using analog signals. [8]

OR

Q4) a) Define following terms: [3]

- i) Setpoint (SP)
- ii) Process Variable (PV)
- iii) Controller Output (CO)

- b) Write a short note on Variable Frequency Drive (VFD). [6]
- c) Explain the temperature control using PLC with the help of block diagram. [8]

P.T.O.

- Q5)** a) Write the desirable properties of SCADA. [4]
b) Draw the block diagram of SCADA and explain in detail. [6]
c) Write a short note on “Automatic Substation Control.” [8]

OR

- Q6)** a) Define the terms: [4]
i) SCADA
ii) HMI
iii) MTU
iv) RTU
b) Write advantages and disadvantages of SCADA system. Write any two applications of SCADA System. [6]
c) Explain SCADA generations in detail with block diagram. [8]

- Q7)** a) Write any three applications of DCS. [3]
b) Differentiate between DCS and PLC. [6]
c) Explain Open System Interconnection (OSI) model in detail. [8]

OR

- Q8)** a) Write any three applications of SCADA systems. [3]
b) Write a short note on Flexible Function Block (FFB). [6]
c) Explain DNP3 protocol of SCADA. [8]

