CBCS SCHEME

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18MT61

Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025
PLC and SCADA

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the architecture of PLC with neat block diagram. **(10 Marks)**
b. Discuss the characteristics of PLC in detail. **(06 Marks)**
c. List the advantages of PLC. **(04 Marks)**

OR

2 a. Explain the different types of PLC in detail. **(10 Marks)**
b. Explain the operation of processor software and executive software in detail. **(10 Marks)**

Module-2

3 a. Design the ladder diagram of AND gate and EX-OR gate with truth table. **(10 Marks)**
b. Design the ladder diagram for 4:1 MUX with appropriate logic. **(10 Marks)**

OR

4 a. Design the ladder diagram for implementation of De-Morgan's theorem. **(10 Marks)**
b. Design the ladder diagram for 1:4 De-MUX with appropriate logic. **(10 Marks)**

Module-3

5 a. Explain the operation of ON-Delay times with example. **(10 Marks)**
b. Explain the operation of counter-up operation with example. **(10 Marks)**

OR

6 a. Draw a ladder diagram for a two motor system having the following conditions:
i) Starting push button starts motor – 1.
ii) After 10 seconds motor – 2 is ON
iii) Stopping the switch stops motor 1 and 2. **(10 Marks)**
b. Explain the following:
i) EQUAL instruction
ii) GREATERTHAN instruction
iii) LIMIT
iv) MASKED COMPARISON FOR EQUAL. **(10 Marks)**

Module-4

7 a. Explain the classification of Input/Output module of PLC in details. **(10 Marks)**
b. Explain the operation of sourcing and sinking in PLC with neat diagram. **(10 Marks)**

OR

8 a. Explain the operation of discrete input module of PLC with neat block diagram. **(10 Marks)**
b. Discuss the working operation following :
i) Single ended input
ii) Differential ended input. **(10 Marks)**

Module-5

9 a. Analyze the typical architecture of SCADA system with neat block diagram. **(10 Marks)**

b. Describe the properties of SCADA system. **(06 Marks)**

c. List the advantages of SCADA system. **(04 Marks)**

OR

10 a. Explain the application of SCADA system in power system automation with neat block diagram. **(10 Marks)**

b. Analyze the application of SCADA system in chemical plant with neat block diagram. **(10 Marks)**

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