CBCS SCHEME

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21MT62

Sixth Semester B.E. Degree Examination, June/July 2024
PLC and SCADA Technologies

Time: 3 hrs. Max. Marks: 100

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Explain the architecture of PLC. **(10 Marks)**

b. Explain the types of PLCs. **(10 Marks)**

OR

2 a. Explain process software executive software. **(10 Marks)**

b. Explain the characteristic of PLC. **(10 Marks)**

Module-2

3 a. Construct ladder diagram for the following :
i) OR Gate
ii) EX – NOR Gate. **(08 Marks)**

b. Develop a 4 : 1 multiplexer using ladder logic. Assume inputs are connected to I : 0/1, I : 0/2, I : 0/3, I : 0/4 ; control signals are connected to I : 0/5, I : 0/6 and output terminal is O : 0/1. **(06 Marks)**

c. Construct a ladder diagram for "the compliment of the sum of two variables is equal to the product of the compliment of each variable". **(06 Marks)**

OR

4 a. Construct ladder diagram for :
i) NAND Gate
ii) EX – OR Gate. **(08 Marks)**

b. Develop a 1 : 4 DeMUX using ladder logic. Assume the inputs is connected to I : 0/1, and control signals are connected to I : 0/2, I : 0/3, output terminals at O : 0/1, O : 0/2 ; O : 0/3, O : 0/4. **(06 Marks)**

c. Construct the ladder diagram for "the compliment of the product of two variables is equal to the sum of the compliment of each variable. **(06 Marks)**

Module-3

5 a. Explain the working of UP counter in detail. **(10 Marks)**

b. Explain MEQ, EQU, LEQ, LIM comparison instruction in detail. **(10 Marks)**

OR

6 a. Explain working of DOWN counter in detail. **(10 Marks)**

b. Construct a ladder diagram for ON time to ON/OFF lamp. **(10 Marks)**

Module-4

7 a. Explain I/O modules in hazardous environment. **(10 Marks)**

b. Explain types of analog I/O modules. **(10 Marks)**

OR

8	a.	Analyze the block diagram of discrete AC I/O modules.	**(10 Marks)**
	b.	Analyze power supply configuration and sink – source modules.	**(10 Marks)**

Module-5

9	a.	Explain SCADA security system and its desirable properties.	**(10 Marks)**
	b.	Explain the 3 SCADA architectures.	**(10 Marks)**

OR

10	a.	Explain typical SCADA architecture.	**(10 Marks)**
	b.	Explain any SCADA application system with block diagram.	**(10 Marks)**

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16-08-2024 09:02:31am - AY - AY - AY - AY - AY - AY - AY