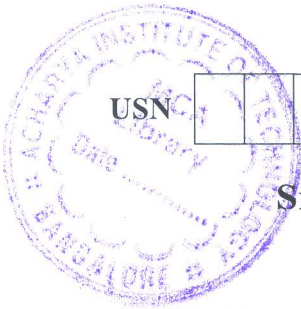


# CBCS SCHEME



USN

--	--	--	--	--	--	--	--	--	--

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.

### 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 (08 Marks)  
ii) EX – NOR Gate.  
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 (08 Marks)  
ii) EX – OR Gate.  
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)

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.

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)

\*\*\*\*\*