

CBCS SCHEME

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15MT61

Sixth Semester B.E. Degree Examination, June/July 2018 PLC and SCADA

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. What is PLC? Write a technical definition of PLC. (04 Marks)
- b. List the characteristics of PLC. (04 Marks)
- c. Explain types of PLC with neat specification. (08 Marks)

OR

- 2 a. Draw a block diagram of PLC and also explain each component. (10 Marks)
- b. Discuss the process of processor software/executive software. (06 Marks)

Module-2

- 3 a. Draw and explain input and output contact program symbol. (03 Marks)
- b. Write the steps present in program format. (03 Marks)
- c. Illustrate the equivalent ladder diagram of
(i) AND Gate (ii) OR Gate (iii) NOT Gate (iv) XOR Gate (v) NAND Gate (10 Marks)

OR

- 4 a. Design a 1:4 demultiplexer using ladder logic. Assume the inputs are connected to I:O/1, control signals are connected to I:O/2 and I:O/3 and the output terminals are O:O/1, O:O/2, O:O/3 and O:O/4. (08 Marks)
- b. A railway station has 3 platforms A, B and C. A train is coming into the station. It has to be given entry to platform A, if A is empty. If both A and B are occupied then it has to be given entry to platform C. If all the platforms are full then the train has to wait. Design the necessary logic diagram. (08 Marks)

Module-3

- 5 Explain the following with neat :
(i) Timer on Delay (ii) Retentive Timer
(iii) Count Up (CTU) (iv) Count Down (CTD) (16 Marks)

OR

- 6 a. Explain the following comparison instructions :
(i) EQUAL or EQU Instruction
(ii) LESS THAN or LES Instruction
(iii) GREATER THAN or GRT instruction
(iv) MASKED COMPARISON FOR EQUAL (12 Marks)
- b. Draw a ladder diagram for a two motor system having the following conditions:
(i) Starting push button starts motor
(ii) After 10 seconds motor 2 is ON
(iii) Stopping the switch stops motor 1 and motor 2 (04 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.

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Module-4

7 Explain the following I/O systems:

- (i) Direct I/O
- (ii) Parallel I/O
- (iii) Serial I/O

(16 Marks)

OR

8 a. Describe the following concept in I/O modules :

(08 Marks)

- (i) Discrete Input Module
- (ii) Threshold Detection
- (iii) Isolation

b. Describe the I/O modules in hazardous location.

(08 Marks)

Module-5

9 a. List out the desirable properties of SCADA system.

(04 Marks)

b. Draw and explain three generation of SCADA architecture.

(12 Marks)

OR

10 Explain the following :

- a. Petroleum Refining Process
- b. Water Purification System.

(03 Marks)

(08 Marks)

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