CBCS SCHEME

USN | | | | | | | | | | |

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 motor1 and motor 2 **(04 Marks)**

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 **(08 Marks)**
b. Water Purification System. **(08 Marks)**

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