CBCS Scheme

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

15EE562

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Programmable Logic Controllers

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Explain the advantages that PLC's offer over conventional relay based control system. **(08 Marks)**

b. Explain typical parts of a modular type PLC. **(08 Marks)**

OR

2 a. Explain any 5 special I/O modules. **(06 Marks)**

b. Explain different PLC programming language defined by IEC – 61131. **(10 Marks)**

Module-2

3 a. Explain the basic operating principle of electromagnetic control Relay. **(08 Marks)**

b. Explain the principle of operation of retentive a on delay timer. **(08 Marks)**

OR

4 a. Write a short notes on :
i) Temperature sensors
ii) Flow measurement **(08 Marks)**

b. Explain each of the following quantities associated with PLC timer instruction.
i) Present time ii) Accumulated time iii) Timer base. **(06 Marks)**

c. Write the IEC and NEMA symbols used to represent each of the following :
i) NO and NC push button
ii) NO limit switch
iii) NO temperature switch
iv) NO pressure switch. **(02 Marks)**

Module-3

5 a. Explain Allen – Bradley SLC 500 counter file C5 **(08 Marks)**

b. Explain Master Control Reset (MCR) instruction with ladder logic program. **(08 Marks)**

OR

6 a. Describe the basic programming process involved in the cascading of two counters. **(08 Marks)**

b. Explain Allen Bradley subroutine related instructions. **(08 Marks)**

Module-4

7 a. Explain Move with Mask (MVM) instruction with an example. **(08 Marks)**

b. Explain Addition (ADD) instruction used in SLC 500 controller and write the ladder logic program used to add the accumulated counts of 2 up counters. **(08 Marks)**

OR

8 a. Explain multiplication instruction (MUL) used with the SLC 500 controllers with an example. **(08 Marks)**

b. Explain each of the following instruction used in data manipulation.
   i) Equal (EQU)
   ii) Greater than (GRT)
   iii) Greater than or equal (GEQ) **(08 Marks)**

Module-5

9 a. Explain sequencer output (SQO) instruction and its parameters. **(08 Marks)**

b. Explain the structure of control systems. **(08 Marks)**

OR

10 a. Explain the operation of the following devices used in motion control.
   i) Servo drive
   ii) Servo motor
   iii) Programmable logic controller **(08 Marks)**

b. Explain FFL and FFU (FIFO load 4 unload) instructions used in word shift operations. **(08 Marks)**

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