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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