SARDAR PATEL UNIVERSITY

B.Sc. (6th Sem) Examination - March/April-2016 CBCS
Programmable Logic Controller (PLC) - 2US06CINS04 (Instrumentation)
Monday, 4th April, 2016
2:30 pm - 5:30 pm

Maximum Marks: 70

Que 1 Each question below gives a multiple choice of answers. Choose the most appropriate one. 10

1 The ____ will supply the trigger pulse for the D, T, and J-K Flip Flops.
   A. One shot
   B. Sequencer
   C. Timer
   D. None of these

2 Timers usually fall into ____ category/ies depending on the PLC manufacturer.
   A. Retentive
   B. Non - retentive
   C. Both a) and b)
   D. None of these

3 PLC ____ is fundamentally counter with some extra features and some minor differences.
   A. Timed One Shot
   B. Sequencer
   C. Both a) and b)
   D. None of these

4 LD commands are terminated with either ____ command or a coil command.
   A. LD
   B. STO
   C. Both a) and b)
   D. None of these

5 The STO command tells the controller that the previous logic is to control the coil that follows the ____ command.
   A. LD
   B. STO
   C. ENTER
   D. None of these

6 The termination command for a line of code is generally ____.
   A. LD
   B. ENTER
   C. STO
   D. None of these

7 An opto-isolator is device consisting of ____.
   A. Light producing element
   B. Light sensing element
   C. Both a) and b)
   D. None of these

8 There are several types of solid state outputs available with PLCs, such as ____
   A. Transistor
   B. Triac
   C. Both a) and b)
   D. None of these

9 The ____ of an A/D operation determines the number of digital values the converter is capable of discerning over its range.
   A. Input range
   B. Number of bits of Resolution
   C. Both a) and b)
   D. None of these

10 If the voltage being measured will never be negative, then ____ input is the best choice.
   A. Unipolar
   B. Bipolar
   C. Both a) and b)
   D. None of these

Que 2 Short Questions (Attempt any TEN) 20

1 Explain the use of R-S Flip Flop in PLC with suitable LADDER Rung.
2 Draw the LADDER diagram for D Flip Flop.
3 What is Flasher?
4 What is PLC Mnemonic Programming Code?
5 Explain briefly Entering of Normally Closed Contacts in PLC LADDER Rung.
6 Explain: LD Command.
7 Draw typical PLC Transistor Output Wiring diagram.
8 Draw typical PLC Non - Isolated Input Wiring diagram.
9 Explain briefly on PLC Power Connection.
10 What do you mean by PLC 'Input Range'?
11 Explain briefly what 'Number of Bits of Resolution' is.
12 Describe Analog Data Handling with respect to PLC.

Que 3	A	Explain Timed One Shot.	05
	B	Write a note on Retentive Timer.	05
		OR	
	C	Give an account of Sequencers.	05
	D	Write a note on Counters.	05

Que 4	A	Explain PLC Complex Ladder Rung.	05
	B	Write a note on OR Ladder Rung.	05
		OR	
	C	Write a note on PLC Simple Branches.	05
	D	Write a note on AND Ladder Rung.	05

Que 5	A	Write a detailed note on PLC Isolated Inputs.	10
		OR	
	B	Give an account of PLC Solid State Outputs.	10

Que 6 A Write a note on 'Analog (D/A) Output' with respect to PLC. **05**
B A 10 - bit bipolar analog input has an input range of -5 to +5 volts. If the **05**
converter outputs the binary number 0110111101_2, what is the voltage
being read?

OR

C Explain Analog Input Potential Problems associated with PLCs. **05**
D A voltage of 3.500 volts is applied to an 8 - bit, 5 volt unipolar analog input **05**
of a PLC. Using monitor software, the PLC analog input register shows a
value of 263_8. Is the analog input working correctly?

Best Wishes