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* Graded Activity 5 *

Q.1 What is role of PLC in industrial automation?

→ 1] PLC's are used in industrial automation to increase reliability, system stability & performance minimizing need for human operators and chances of human error.

2] Fundamental role of PLC is to automate process by sending programmed control functions to output device based on input signal.

3] An input device may signal to PLC that pressure in a line is high PLC would automatically send a programmed command to output device.

Q.2 What are the types of PLC programming languages? Explain.



1] Ladder diagram :-

(a) It is built in form of horizontal rungs with 2 vertical rails that represent electric connection on relay logic schematics.

(b) Rungs allowed it to be organised & easy to follow. It supports online editing.

2] Sequential function charts:-

- (a) Transitions and steps are used to achieve your end results
- (b) Steps act as major Function in
- (c) Transistor are instruction that you use to move from one step to other

3] Function Block diagram (FBD) :-

- (a) Function block diagram describe function between input and output connected in blocks
- (b) Function block diagram does not work well with motion controls

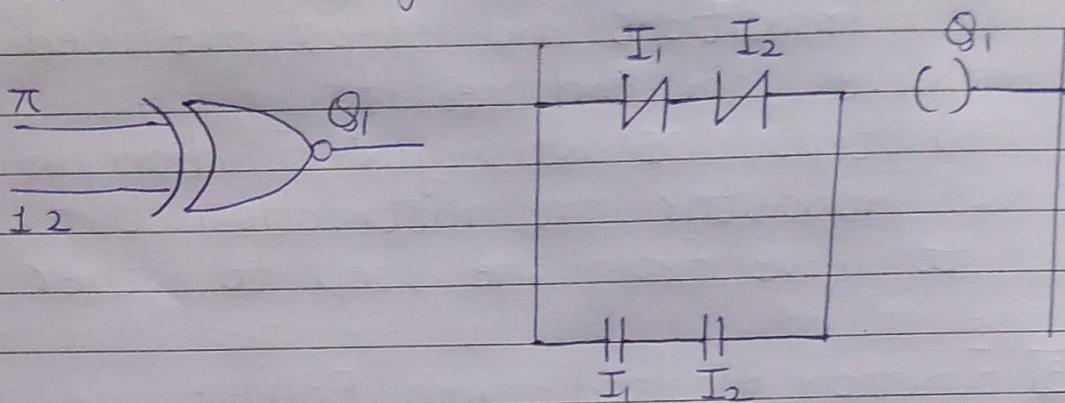
4] Structured text :-

- (a) It is very powerful tool that can execute complex tasks utilizing algorithm and mathematical function along with repetitive tasks
- (b) Structured text is a high-level language

5] Instruction list :-

- (a) It resembles assembly language
- (b) Instruction list language contains instruction with each instruction on new line

Q.3 Draw ladder logic XNOR gate



- 1) Q1 will be on if both switches I₁ & I₂ are open or closed.
- 2) Q1 will not be on if anyone switch is activated and other is deactivated.

I ₁	I ₂	Q ₁
0	0	1
0	1	0
1	0	0
1	1	1

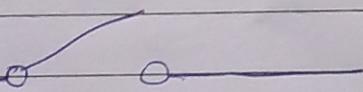
Q.4 Give two example of inputs and outputs connected to PLC with symbol



II Input device :-

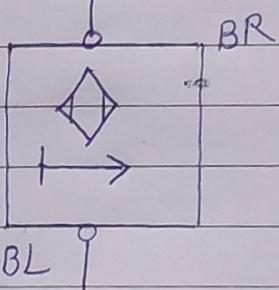
a) Switches

Symbol :-



b) Photo electric sensor

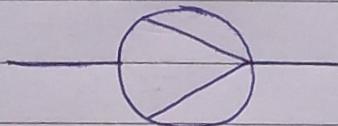
Symbol



III Output devices :-

a) Pump -

Symbol -



b) Motor Starter :-

Symbol -

