PLC

Extensive worksheet

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Draw the FBD for each one of the following expressions:

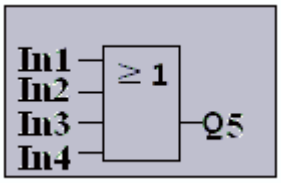
Consider the name of the output **Q1 in all cases**

Expresion	FBD
$(\overline{A}.B).(C+\overline{D})$	
$(A.B)+(C.D)$	
$(A.B)+(C+D)$	

Expresion	FBD
$(A.B)+\overline{C}$	
$(A.B).(C+D)$	
$A.B.\overline{C}$	

Expresion	FBD
$(\overline{A}.B).(C \cdot \overline{D})$	
$(\overline{A}.B)+ \overline{C}$	
$(\overline{A}.B)+(C \cdot \overline{D})$	

The following block represents 4 switches in parallel.



- True
- False

In .....An input pulse increments or decrements an internal value, depending on the parameter setting

The given truth table represnts :

A	B	Output
0	0	0
0	1	0
1	0	0
1	1	1

- NOT gate
- AND gate
- NAND gate
- OR gate

For ON dealy timer The output is ..... until a configured delay time has expired. (1 point)

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The controller which is able to work in sever conditions is: (2 points)

- Computer
- PLC
- Microcontroller
- Microprocessor

Input bit 0 in IO Simulator matches I9 in PLC. (1 point)

- True
- False

For OFF Delay timer the output is .....until
a defined time has expired. (1 point)

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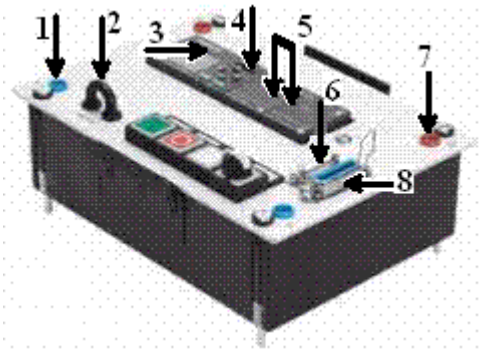
Write the LOGO! EduTrainer components and names: (16 points)



A light (connected to Q1) turns ON when S1 (connected to I1) is switched and S2 (connected to I2) is not switched draw the FBD for this problem

A machine (connected to Q2) turns on when s1 or s2 (connected to I1, I2 respectively) is switched with s3 (connected to I3) draw the FBD for this problem

Two pushbuttons (connected to I1, I2) are used to turn on a machine (connected to Q8) when both are pressed; the machine stays ON after releasing any of them. A third pushbutton (connected to I3) is used to turn of the machine when it is pressed if all pushbuttons are normally open, Draw the FBD for this problem.

Repeat the same problem if pushbutton 3 is “normally close”.

A motor (connected to Q3) turns on when PB1 or PB2 are pressed, it keeps on after releasing any of them the same motor goes off when both PB3 and PB4 are pressed, if all PBs are normally open and connected to input (I1,I2,I3 and I4) respectively draw the FBD for this problem.

A light (connected to Q2) turns on if PB1 (connected to I3) is pressed and stays on for 10 seconds, if the same light can be switched off using PB2(connected to I4) draw the FBD for this problem.

PB1 (connected to I1) is used to turn on a conveyor belt (stepper motor is connected to Q8) the conveyor belt stays on after releasing PB1 the belt stops when a normally open sensor (connected to I12) counts 10 pieces or when a normally closed push button PB2 (connected to I2) is pressed.

Match the following Function block diagram with their functions:

1	It produces an output that is opposite to the input.
2	It produces a HIGH output only if one or more of the inputs are HIGH.
3	It produces a HIGH output only when all its inputs are HIGH
4	Memory function is used to store a signal.
5	This function is used to provide a time-delay in a circuit.
6	used to detect the number of items and events