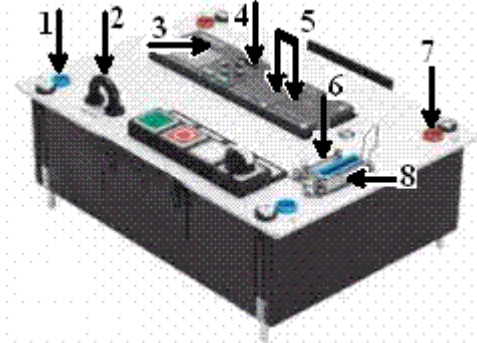**Ladder Diagrams**
Ladder Diagrams
Logic gates
Truth tables

1. Output bit 0 in IO Simulator matches Q5 in PLC. (1 point)

   ○ True

   ○ False

2. Match The LOGO! EduTrainer components and names: (16 points)

        a. 24 VDC socket

        b. Two expansion modules

        c. EMERGENCY-STOP bridge

        d. 0 VDC socket

        e. Submin-D socket

        f. SysLink interface

   g. LOGO! Basic

        h. Interface unit

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

4. For LOGO PLC one of the following sockets is used for analogue signal: (2 points)

   ○ Interface socket

   ○ Submin-D socket

   ○ SysLink socket

   ○ 24 VDC socket

5. The following diagram is called: (2 points)

   ○ Circuit diagram

   ○ Logic gates diagarm

   ○ Ladder diagram

   ○ Function Block Diagram
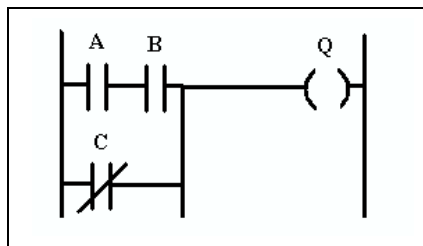
6. In ....An input pulse increments or decrements an internal value, depending on the parameter setting (1 point)

    _____

7. Which one of the following is NOT contact (Break Contact): (2 points)

    ○   --| |--

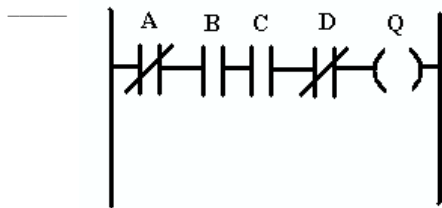   ○   --(\)--

    ○   --|\|--

    ○   --( )--

8. To insert a time delay relay SF must be selected. (1 point)

    ○   True

    ○   False

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

    _____

10. Match each of the following Ladder Diagrams with the correct logical expression: (20 points)

a. $(A.B)+(C+D)$

b. $(\bar{A}.B).(C \cdot \bar{D})$

c. $(\bar{A}.B)+ \bar{C}$

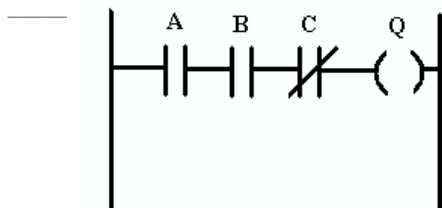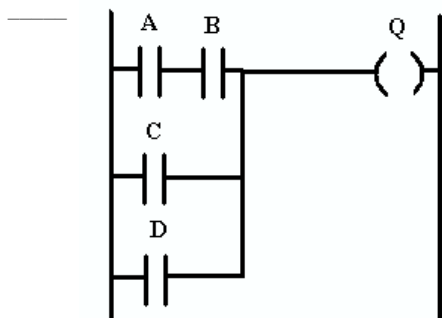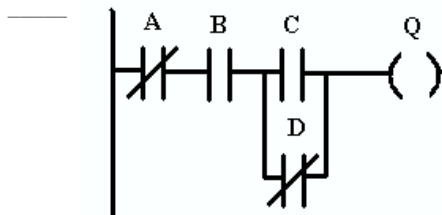d. $(\bar{A}.B)+(C \cdot \bar{D})$

e. $(A.B)+(C.D)$

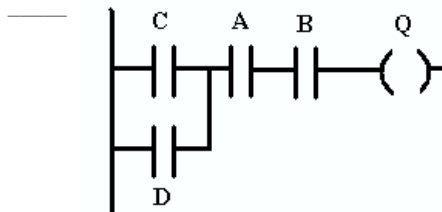f. $(A.B).(C+D)$

g. $(\bar{A}.B).(C+\bar{D})$
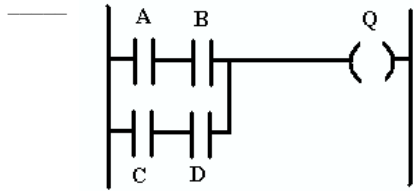
h. $(A+B). \bar{C}$

i. $(A.B)+ \bar{C}$

j. $A.B. \bar{C}$

A B   Q

C D

A   C   Q

B

A B   Q

C

A B   Q

C D

A B   Q

C
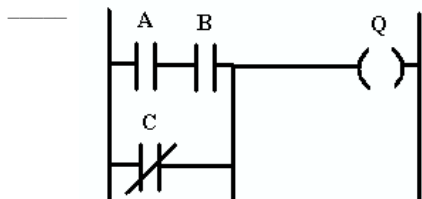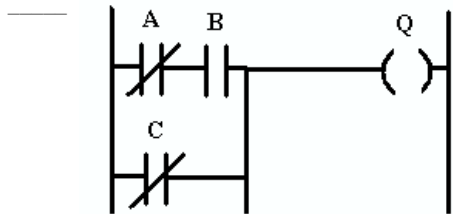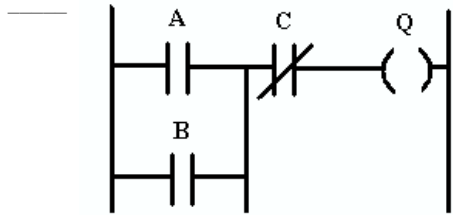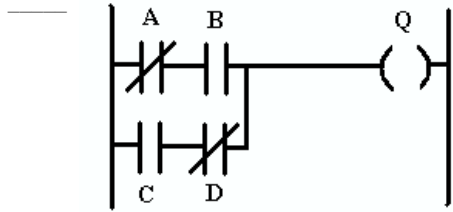
11. The given truth table represnts : (2 points)

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

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

12. Hours Counter may widely be used for scheduling ....
    (1 point)
    _____

13. The controller which is able to work in sever conditions is: (2 points)
- ○ Computer
- ○ PLC
- ○ Microcontroller
- ○ Microprocessor

14. The reason(s) why we need Hardware Controller is (are): (2 points)
- ○ To reduce time
- ○ To increase the quality
- ○ To allow for change
- ○ All answers are correct

Ladder Diagrams
Ladder Diagrams
Logic gates
Truth tables

1. True

2. d, c, g, h, b, e, f, a

3. not reset, ON

4. Submin-D socket

5. Ladder diagram

6. Up/Down Counter, up down counter, counter

7. --|\|--

8. True

9. not switched on, off

10. b, f, g, a, j, d, h, c, e, i

11. AND gate

12. maintenance

13. PLC

14. All answers are correct