Digital Logic Design

(EL-1005)

LABORATORY MANUAL

Spring 2022

LAB 01

Introduction to Logic-Works 5

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STUDENT NAME | ROLL NO | SEC

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MARKS AWARDED: /02

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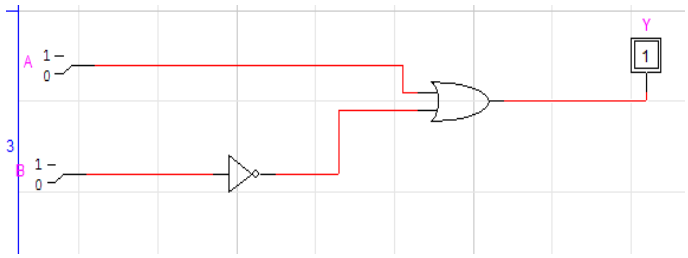
Lab #1 Tasks

Exercise # 01

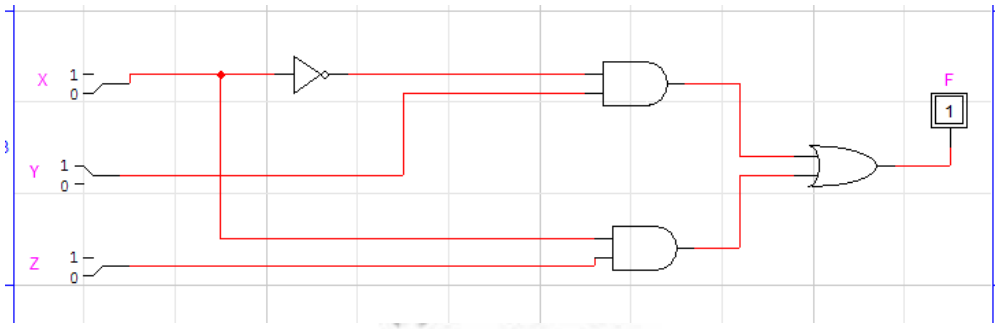
Fill up the Truth Table given below for this circuit and design it in Logic Works.



Input (A)	Input (B)	Output (Y)
0	0	1
0	1	0
1	0	1
1	1	1

Exercise # 02

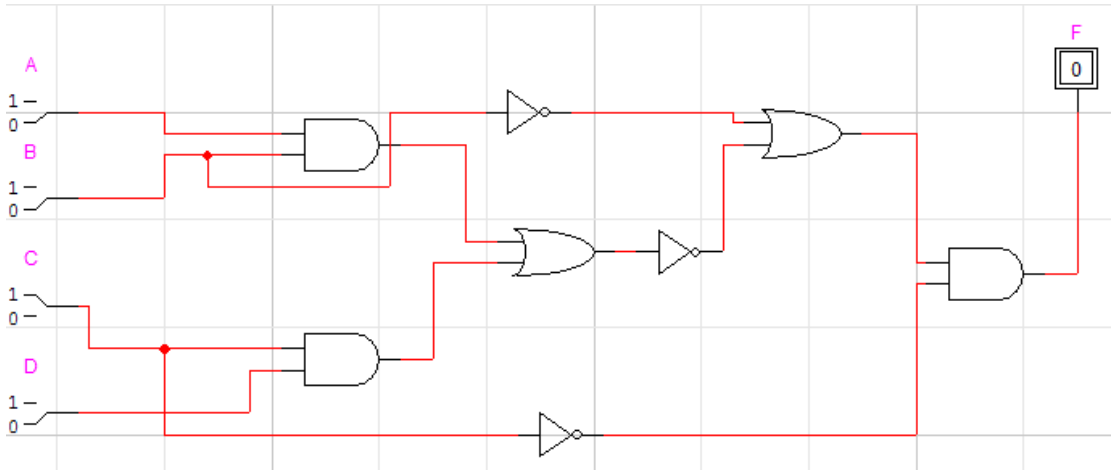
Fill up the Truth Table given below for this circuit and design it in Logic Works



Input (X)	Input (Y)	Input (Z)	Output (F)
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

Exercise # 03

Fill up the Truth Table given below for this circuit having four inputs.

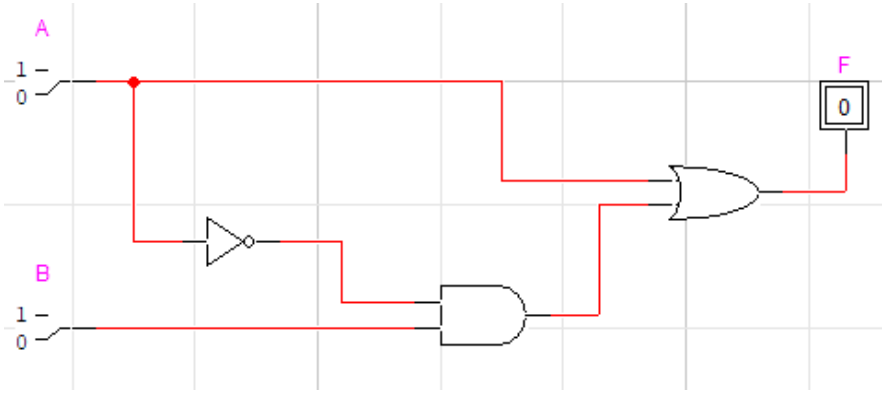


A	B	C	D	F
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

Exercise # 4

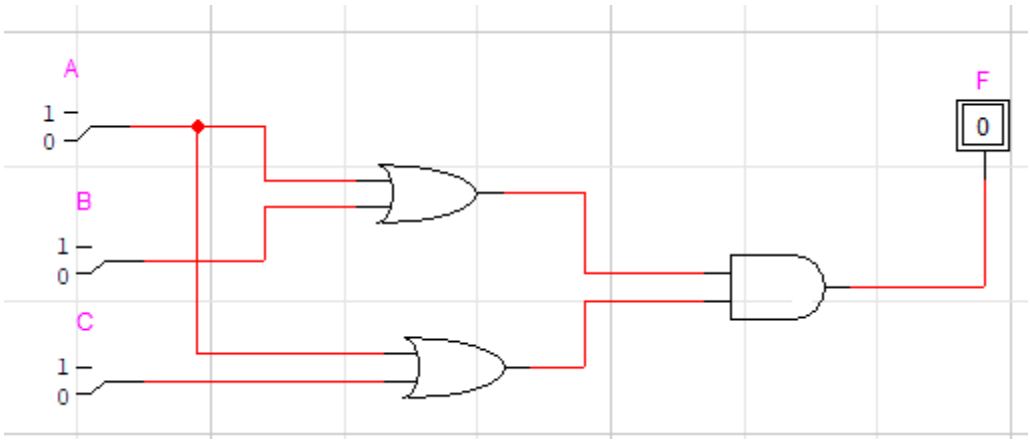
Draw the circuit diagrams for each of the Boolean expressions given below on Logic Works tool and verify the results with the help of Truth Table.

1. F = A + A'B



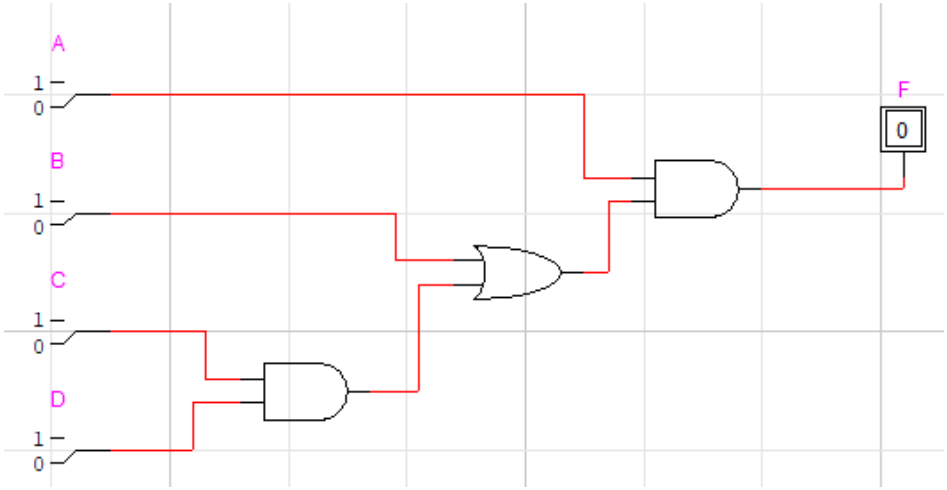
A	B	F
0	0	0
0	1	1
1	0	1
1	1	1

2. F = (A + B)(A + C)



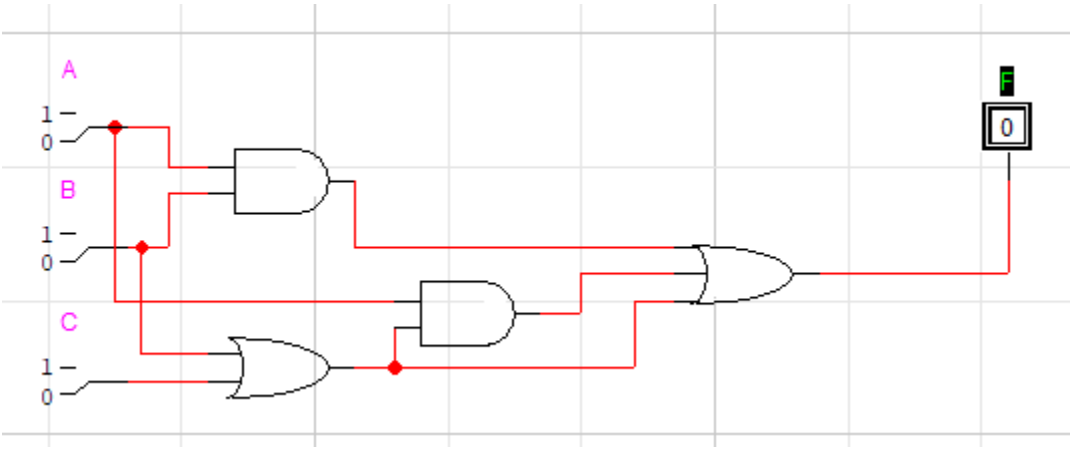
A	B	C	F
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

3. F = A(B + CD)



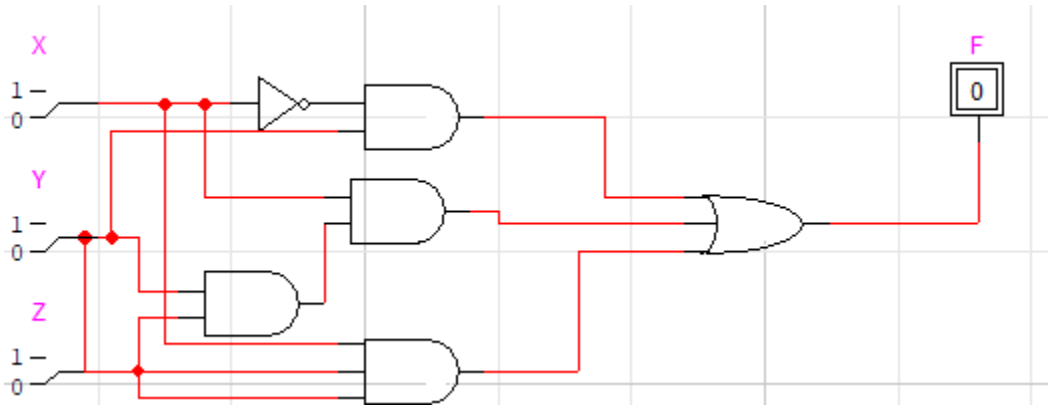
A	B	C	D	F
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

4. F = AB + A(B + C) + (B + C)



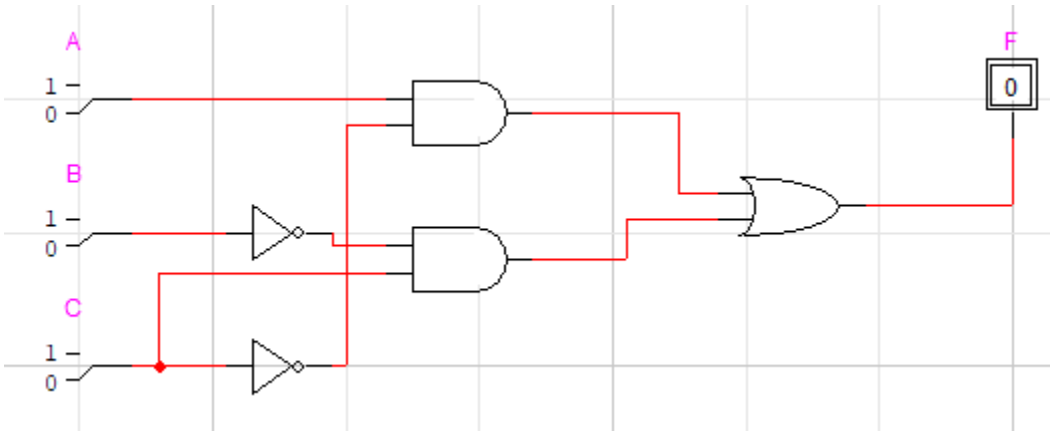
A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

5. F = X (YZ) + X'Y + (XY) Z'



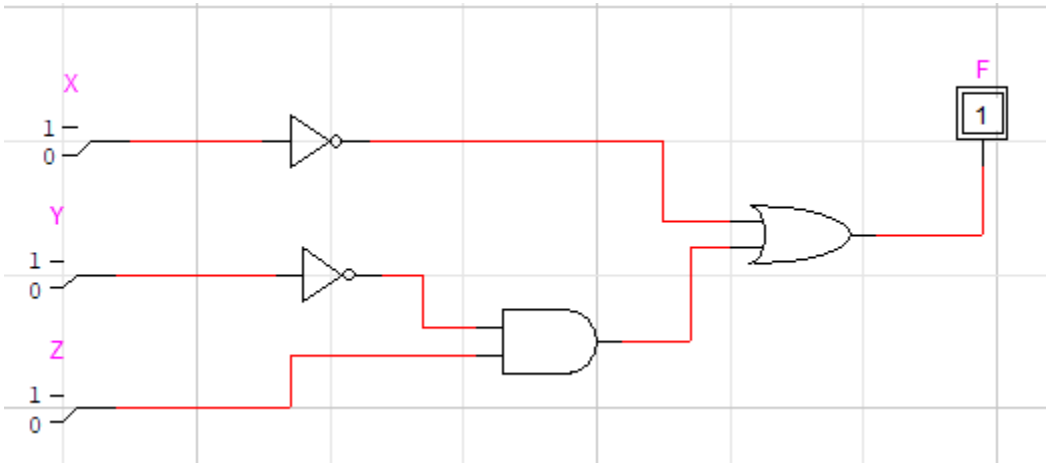
A	B	C	F
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

6. F = B'C + AC'



A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

7. F = X' + Y'Z



A	B	C	F
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0