

اجب عن جميع الأسئلة

Q1:

Part (A)

F- is a Boolean Function shown in Fig(1)

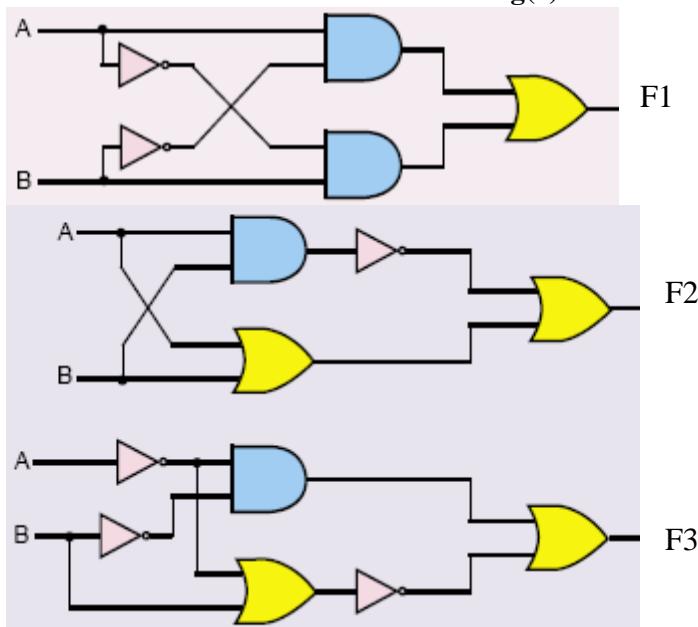


FIG (1)

- (1) If $A=1, B=0$ What is the value of F1,F2,F3?
- (2) Write down :
 - (a) the Boolean expression of F1,F2,F3?
 - (b) F1,F2,F3 - truth table .

Part (B)

Define and Explain the difference between each of the following pairs?

- 1- Multiplexer and De Multiplexer.
- 2- Encoder and Decoder .
- 3- Logic Circuit and Electronics Circuit .
- 4- Half Subtractor and Full Subtractor .
- 5- Bit and Byte.
- 6- 1'st Complement and 2'nd Complement

Q2:

Part(A)

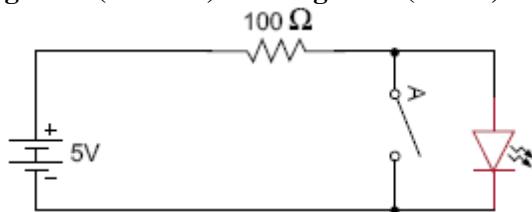
Draw the Combinational CKT for the functions :

1- $F_1 = \overline{AB} + \overline{A}B + AB$

2- $F_2 = AC + BD$

Part (B)

in the Circuit below if logic 1 is (+ 5 volt) and Logic 0 is (0 volt):-



- (i) What is the basic gate performing this circuit
- (ii) Write down the Truth table of this Ckt

Q3:

Part (A)

Perform the following operations:

1- $(C3)_{16} + (F5)_{16}$

2- $(BCD)_{16} - (173)_{16}$

3- $(-5)_{10} + (-9)_{10}$ (perform it in binary system)

4- $11100111 - 00010011$

5- $(100)_2 * (110)_2$

6- $(10100)_2 / (100)_2$

Part (B)

Draw the gate symbol , write the truth table and the boolean expression for the given gates:

1- OR

2- AND

3- NOT

4- BUFFER

5- XNOR

6- XOR

7- NOR

8- NAND

Q4 :

Part (A)

1-find out the expression for the each K-map

	AB	00	01	11	10
CD	00	1			(d)
	01		1	1	
	11		1	1	
	10	d			

K-map (1)

	AB	00	01	11	10
CD	00	1			d
	01		1	1	
	11		1	1	
	10	(d)			

K-map (2)

	AB	00	01	11	10
CD	00	1	1		1
	01		1		
	11		1	1	
	10	1	1		1

K-map (3)

2-by using truth table prove

$$(\overline{A+B}) = (\overline{A} \cdot \overline{B})$$

Part (B)

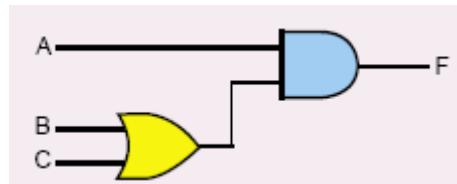
1- Use only NAND gates to design a logic CKT of :

$$(i) F = A \cdot (B+C)$$

$$(ii) F = A \cdot B + C \cdot D + E \cdot F$$

2- Describe the implementation of $F = A \cdot B$ using only NOR gates.

3 - Reconstruct the following Circuit by using only NAND gate



Good luck