Quiz 1 answers

1) F=1 when ?

Z is the least Significant

$$F = (\underbrace{\quad})_{\downarrow} \cdot (\underbrace{\quad})_{\downarrow} \cdot (\underbrace{\quad})_{\downarrow}$$

$$0 \qquad 0 \qquad 0$$
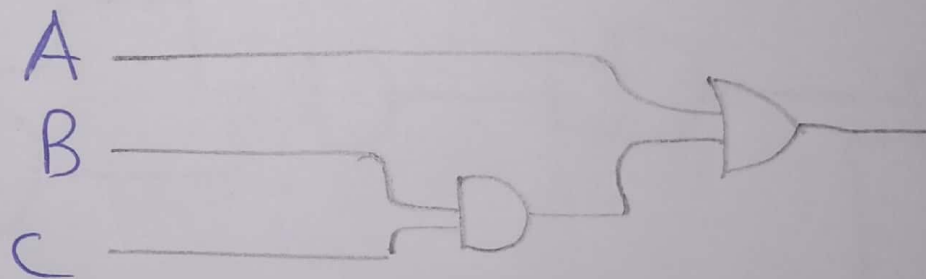
يكفي انا
واحد input
= 0

1 out of 3 inputs
are = 0

Q2 min number of gates to implement $AB + A(A+C) + B(A+C)$

$AB + A + AC + AB + BC$

$A[1 + B + \cdots -] + BC$

$= A + BC$

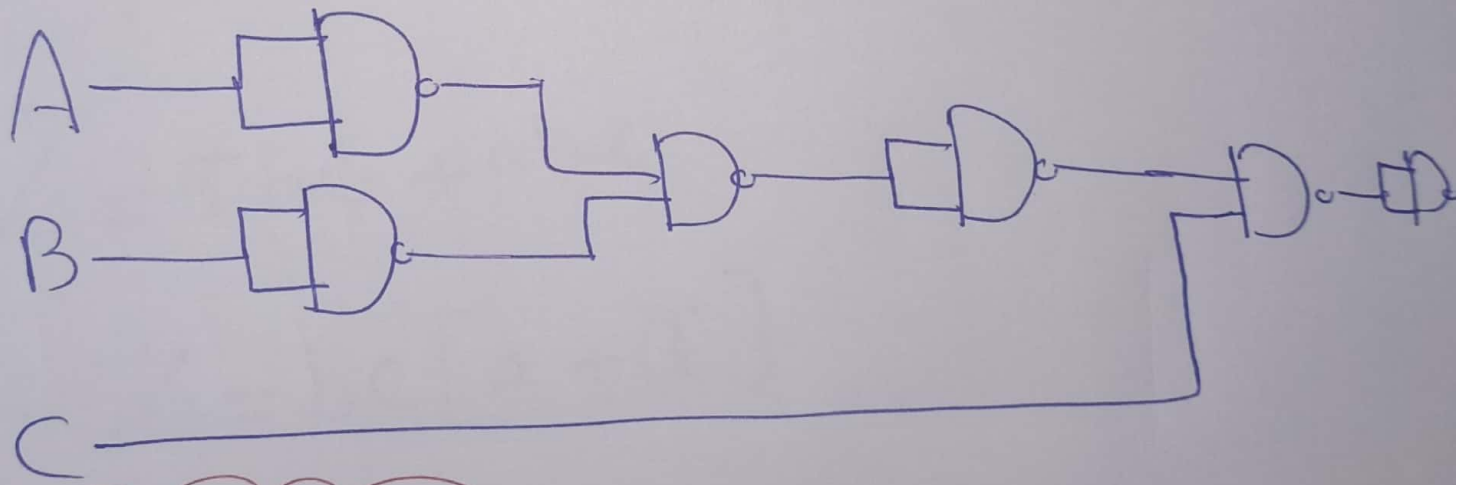2 gates

Q3) $Z = \overline{A} \overline{B} C$ implement

using 2-input NAND gates

(min number)

$Z = \overline{\overline{\overline{A} \overline{B}} C}$

6 gates

Q5 Simplification of $f(A,B,C,D)$

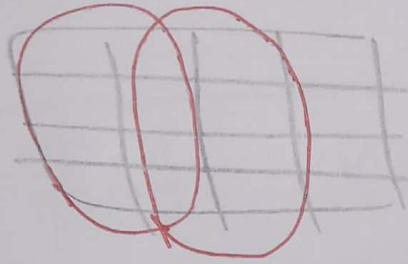$$= \sum_m (5,6,7,13,14,15) + \sum_d (0,8,10)$$

Yield the function ---

AB \ CD	00	01	11	10
00	d ⁰	¹	3	2
01	u	1 ⁵	1 ⁷	1 ⁶
11	12	1 ¹³	1 ¹⁵	1 ¹⁴
10	d ⁸	9	11	d ¹⁰

$$F = \sum_m (5,6,7,13,14,15)$$

الحل د ملوش تأثير

Q6 Simplify

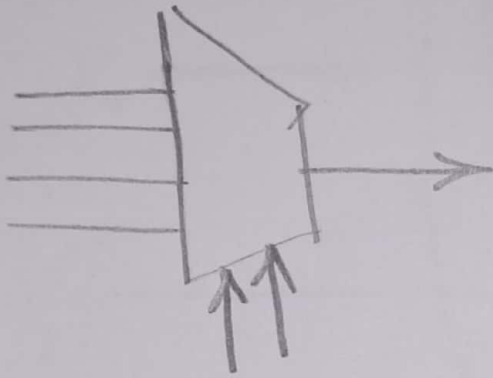| AB \ CD	00	01	11	10
00	1	d	1	d
01	1	d	1	d
11	1	d	1	d
10	1	d	1	0

$$= \bar{A} + B$$

none of the others

Q7 which acts as a device that represent the highest of the inputs that are active

Priority encoder

Q8 which has n selectors and 2^n inputs

Mux

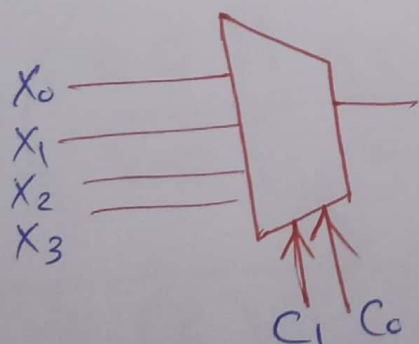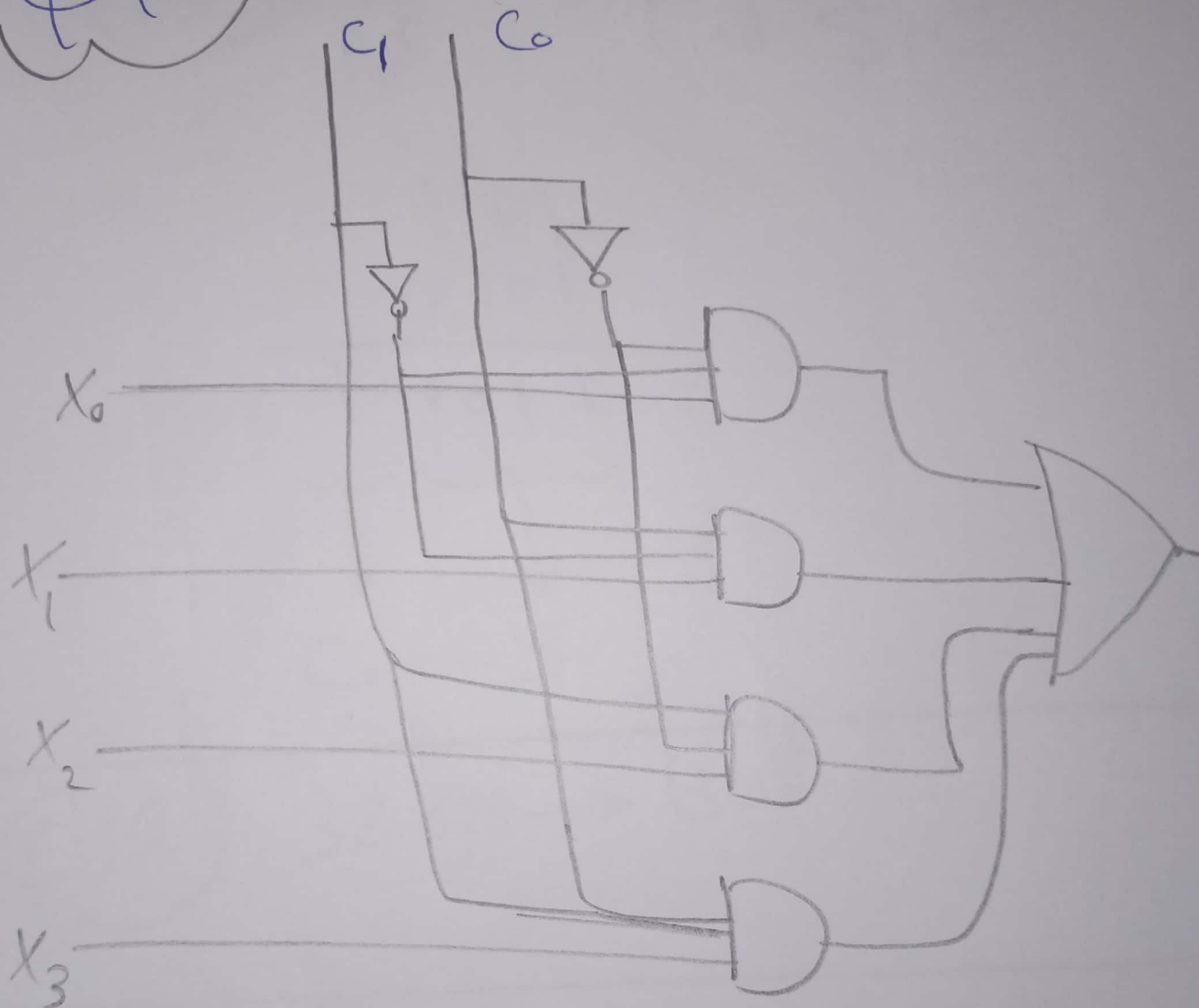
Q9 Find $X \oplus Y \oplus XY$

$X \oplus Y(1 \oplus X)$

$= X \oplus Y\bar{X} = \bar{X}(Y\bar{X}) + X(\bar{Y}+X)$

$= \bar{X}Y + X\bar{Y} + X$

$= \bar{X}Y + X = X + Y$

#

Q10 the circuit acts as

C_1 C_0

Mux

X_0
X_1
X_2
X_3

C_1 C_0

$$M = \overline{C_0}\,\overline{C_1}\,X_0 + C_0\,\overline{C_1}\,X_1$$
$$+ \overline{C_0}\,C_1\,X_2 + X_3\,C_1\,C_0$$

Q11) $1101 + 0101$ and carry
input = 1   Find S & Co

$$
\begin{array}{r}
1\;1\;1 \\
1\,1\,0\,1 \\
0\,1\,0\,1 \\
\hline
1\;\;0\,0\,1\,1 \\
\end{array}
$$

Co   S

Q12) $32.625 \longrightarrow BCD$

$$\left(\underset{3}{\underline{0\,0\,1\,1}}\;\underset{2}{\underline{0\,0\,1\,0}}\, \cdot\, \underset{6}{\underline{0\,1\,1\,0}}\,\underset{2}{\underline{0\,0\,1\,0}}\,\underset{5}{\underline{0\,1\,0\,1}} \right) Bcd$$

Q13) --- is the max no of gates can be fed by my gate output

fan-out

Q 14 Simplest decoder

is ———

$$n \longrightarrow 2^n$$
inputs
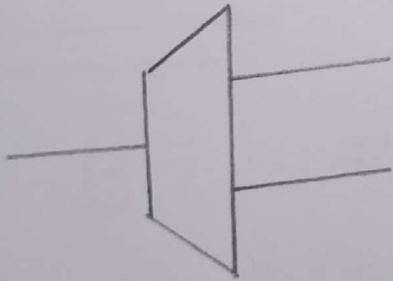
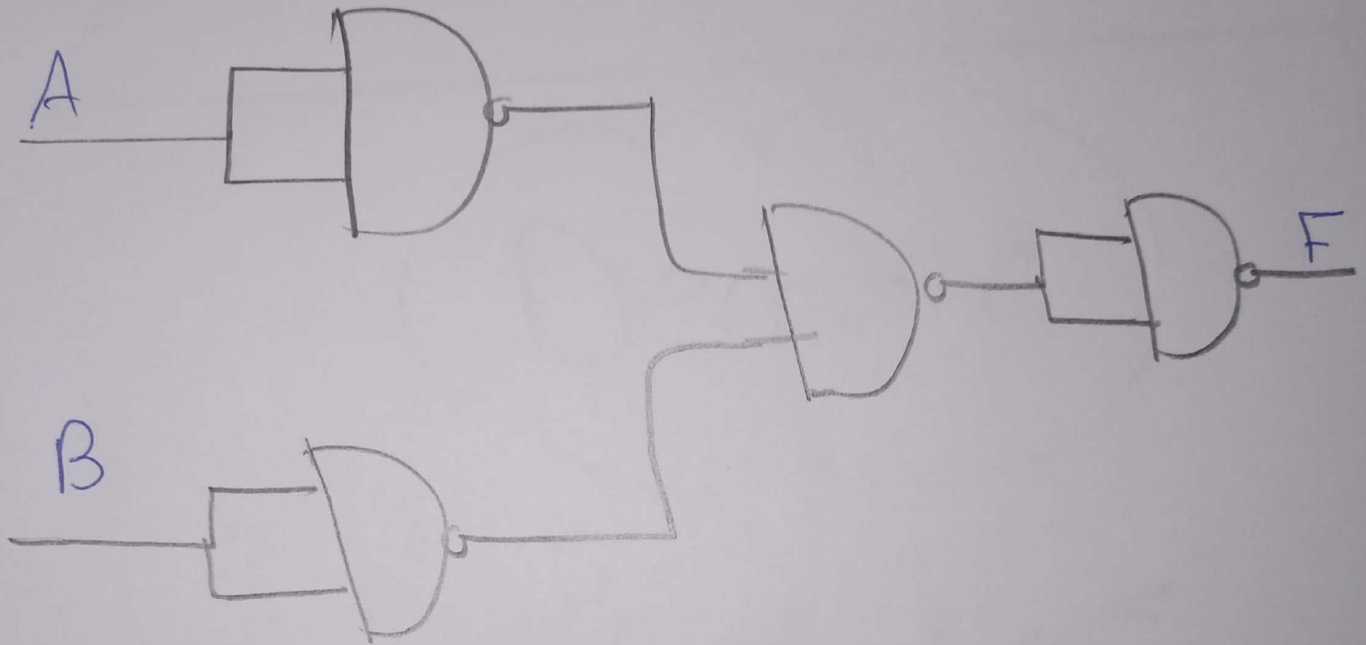$$n = 1 \longrightarrow 2^1$$

1 — 2 decoder

Q 15 Which act as a circuit used to pass any one of several inputs to a single output?

Mux

Q16) the circuit represents

$$\overline{\overline{A}\ \overline{B}} = \overline{\overline{A}\ \overline{B}} = \overline{A + B}$$

NOR

Q17 which activates only one output @ a time?

decoder

Q18 Simplist Mux is—
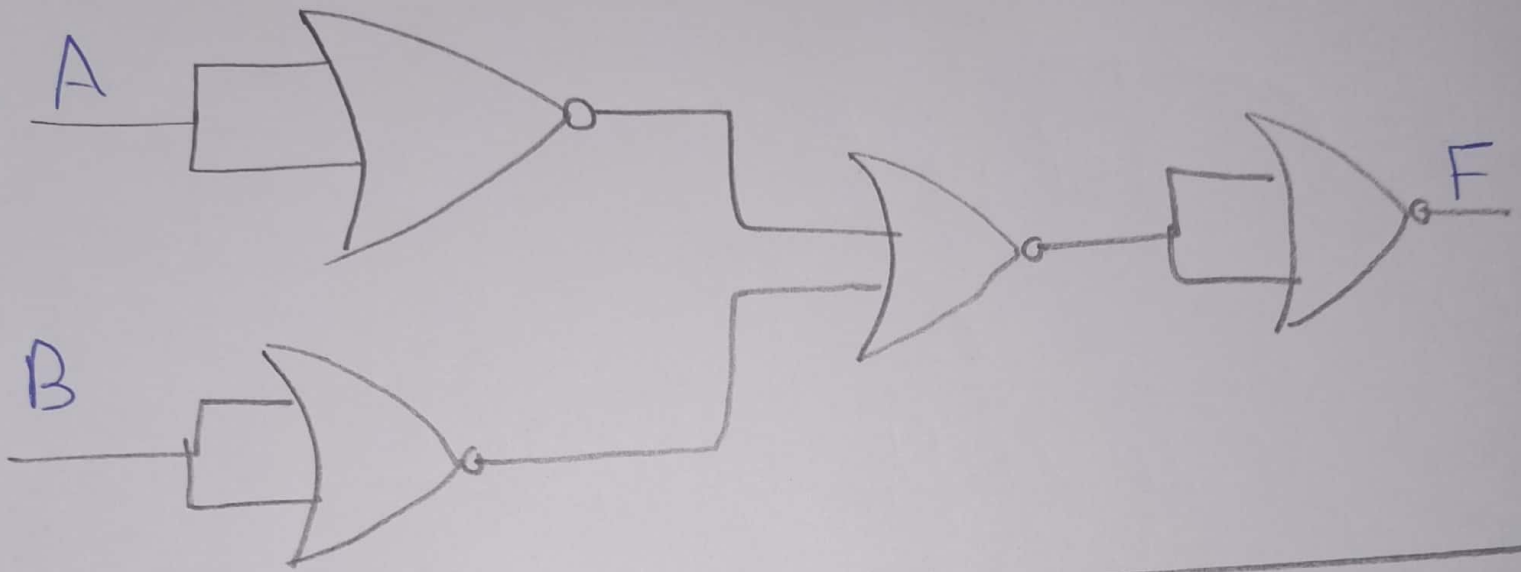
$$n \longrightarrow 2^n$$
selector   inputs

$$n = 1 \longrightarrow 2^1$$

$$\therefore 2-1 \text{ Mux}$$

Q19 Find the out put

A

B

F

$$\overline{\left(\overline{A}+\overline{B}\right)} = \overline{AB}$$

NAND gate

Q20 if 2 inputs are active on a Priority encoder ---- will be coded

the higher Value

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