Nirakar Shrestha

1) $F = xy'z + x'y'z + w'xy + wx'y + wxy$

$= xy'z(x+x') + xy(w'+w) + wx'y$

$= xy'z + xy + wx'y$

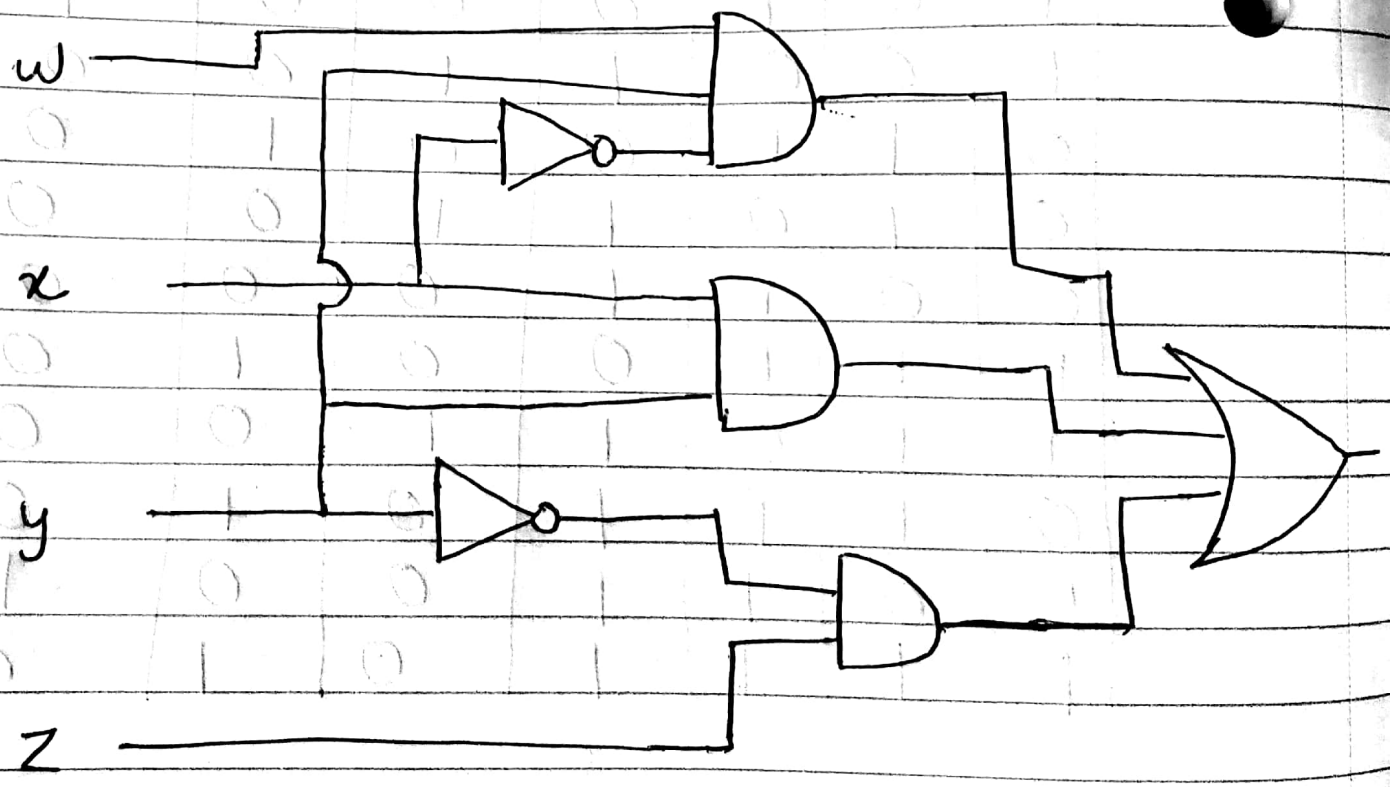
a)

w	x	y	z	y'z	xy	wx'y	F
0	0	0	0	0	0	0	0
0	0	0	1	1	0	0	1
1	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0
0	0	1	0	0	0	0	0
1	1	0	0	0	0	0	0
1	0	1	0	0	0	1	1
1	0	0	1	1	0	0	1
0	1	1	0	0	1	0	1
0	1	0	1	1	0	0	1
0	0	1	1	0	0	0	0
1	1	1	0	0	1	0	1
1	1	0	1	1	0	0	1
0	1	1	1	1	0	0	1
1	0	1	1	0	0	1	1
1	1	1	1	0	1	0	1

K-maps

wx \ yz	00	01	11	10
00		1		
01		1	1	1
11		1	1	1
10		1	1	1

b)



2a) 2k x 16

~~2x10~~ $= 2^1 \times 2^{10} \times 16$

$(10+1) = 11$ is the address line

$(10+1) + 16 = 27$ is the I/O line

b) 64 k x 8

$= 2^6 \times 2^{10} \times 8$

Address line : $(6+10) = 16$

I/O line : $(6+10)+8 = 24$

c) 16 M x 32

$= 2^4 \times 2^{20} \times 32$

Address line = $(4+20) = 24$

I/O line = $(4+20+32) = 56$

d) 4G x 64

$= 2^2 \times 2^{30} \times 64$

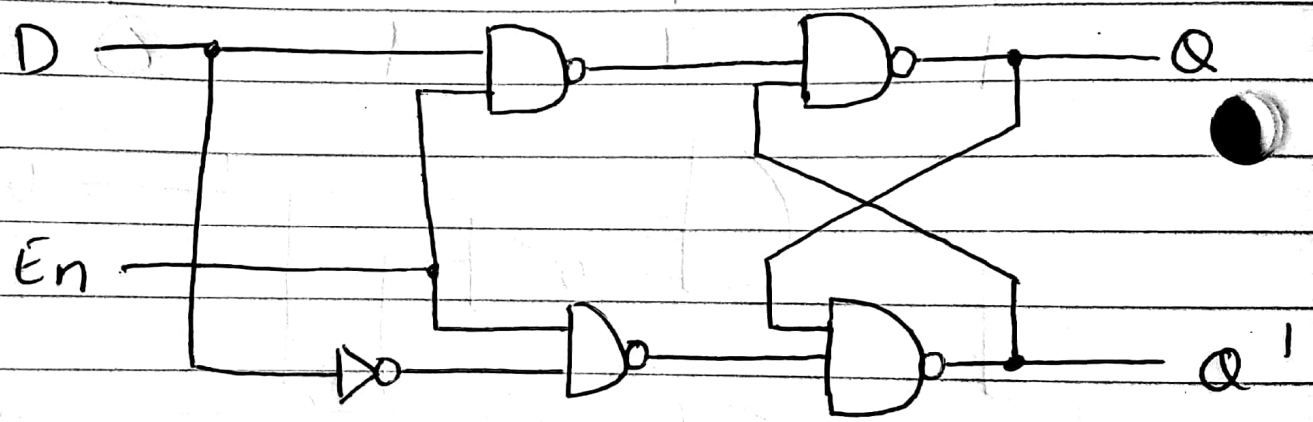
Address line = $(2+30) = 32$

I/O line = $(2+30+64) = 96$

3) Truth table for D flip-flop

Clock (D)	Input (En)	Output (Q
0	X	0
1	0	0
1	1	1

Logic diagram for D flip flop



JK flip flop

Q	J	K	Q^1
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

JK flip flop

Q	J	K	Q'
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0