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ECE-218

Assignment 4

4.3) a) $Y_0 = A_0 S'E' + B_0 SE'$
 $Y_1 = A_1 S'E' + B_1 SE'$
 $Y_2 = A_2 S'E' + B_2 SE'$
 $Y_3 = A_3 S'E' + B_3 SE'$

$\therefore Y_i = A_i S'E' + B_i SE'$ for $i = 0, 1, 2, 3, \dots$

$Y_i = (A_i S' + B_i S) E'$

4.5)

x	y	z	A	B	C
0	0	0	0	0	1
0	0	1	0	1	0
0	1	0	0	1	1
0	1	1	1	0	0
1	0	0	0	1	0
1	0	1	0	1	1
1	1	0	1	0	0
1	1	1	1	0	1

A:

x \ yz	00	01	11	10
0	0	0	1	0
1	0	0	1	1

$A = XY + YZ$

B:

x \ yz	00	01	11	10
0	0	1	0	1
1	1	1	0	0

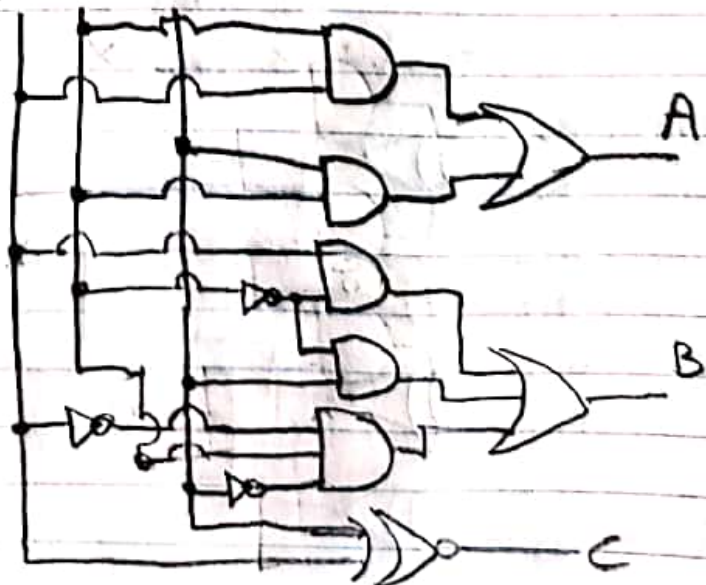
$B = XY' + Y'Z + X'YZ'$

C:

x \ yz	00	01	11	10
0	1	0	0	1
1	0	1	1	0

$C = XZ + X'Z'$

x y z

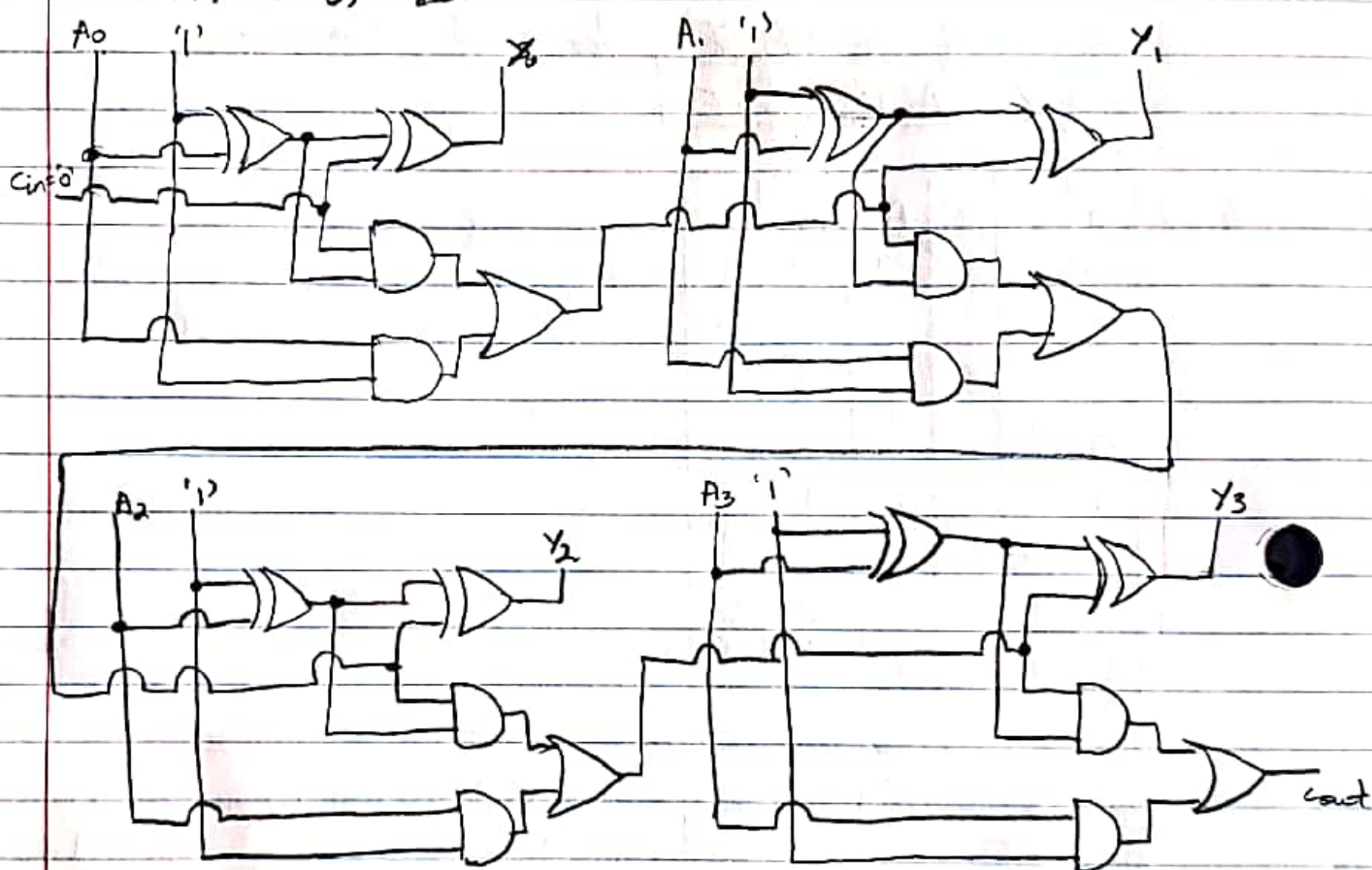


4.11) b) Inputs

$$A_3 A_2 A_1 A_0 - 1 = A_3 A_2 A_1 A_0 + (2's \text{ complement of } 1) \\ = A_3 A_2 A_1 A_0 + 1111$$

Outputs

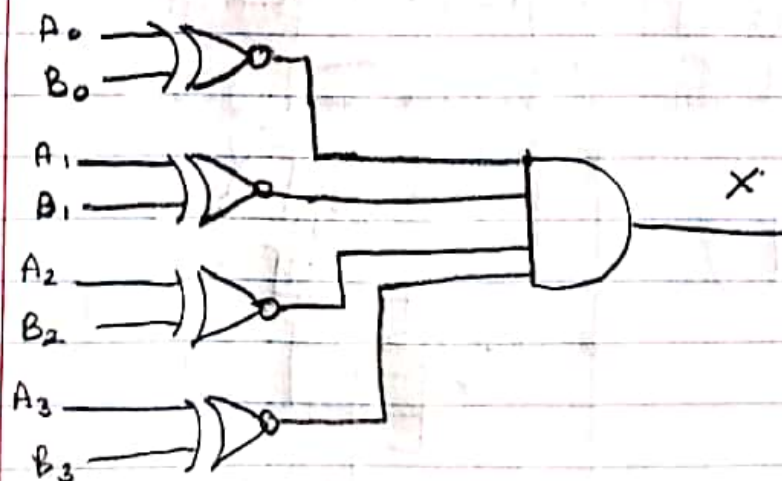
$Y_0, Y_1, Y_2, Y_3, C_{out}$



4.21

Inputs: $A = A_3, A_2, A_1, A_0$
 $B = B_3, B_2, B_1, B_0$

Output: X



NOR $Z = (A \oplus B)'$

A	B	X
0	0	1
1	0	0
0	1	0
1	1	1

AND

A	B	Z
0	0	0
0	1	0
1	0	0
1	1	1