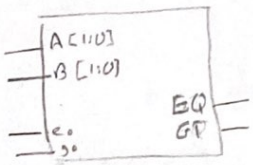
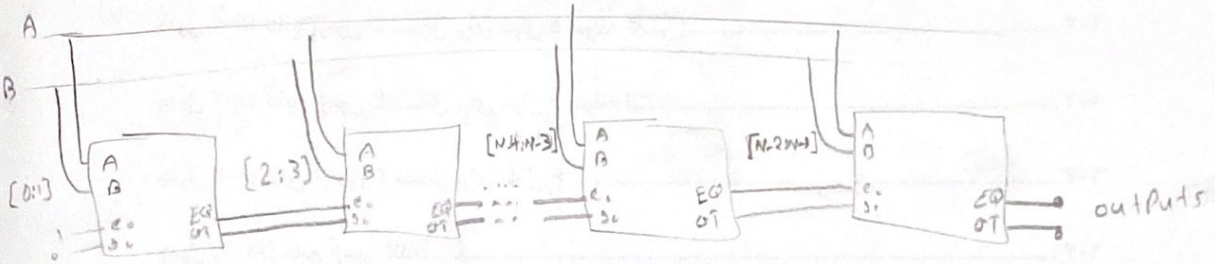
Ali Keramati work sheet 810198519

1+1 → 111

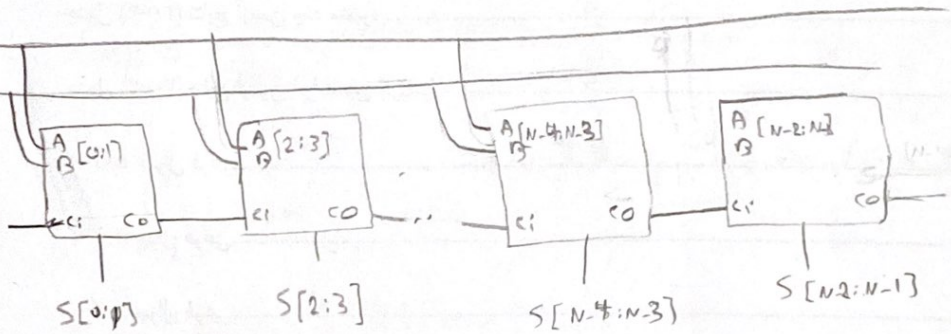
worst = 199

(A)

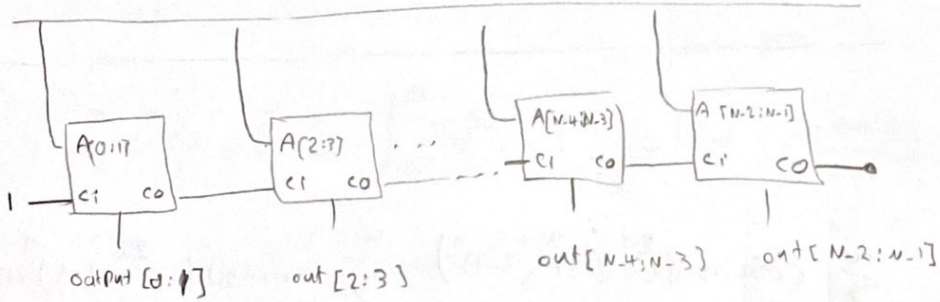




(B)

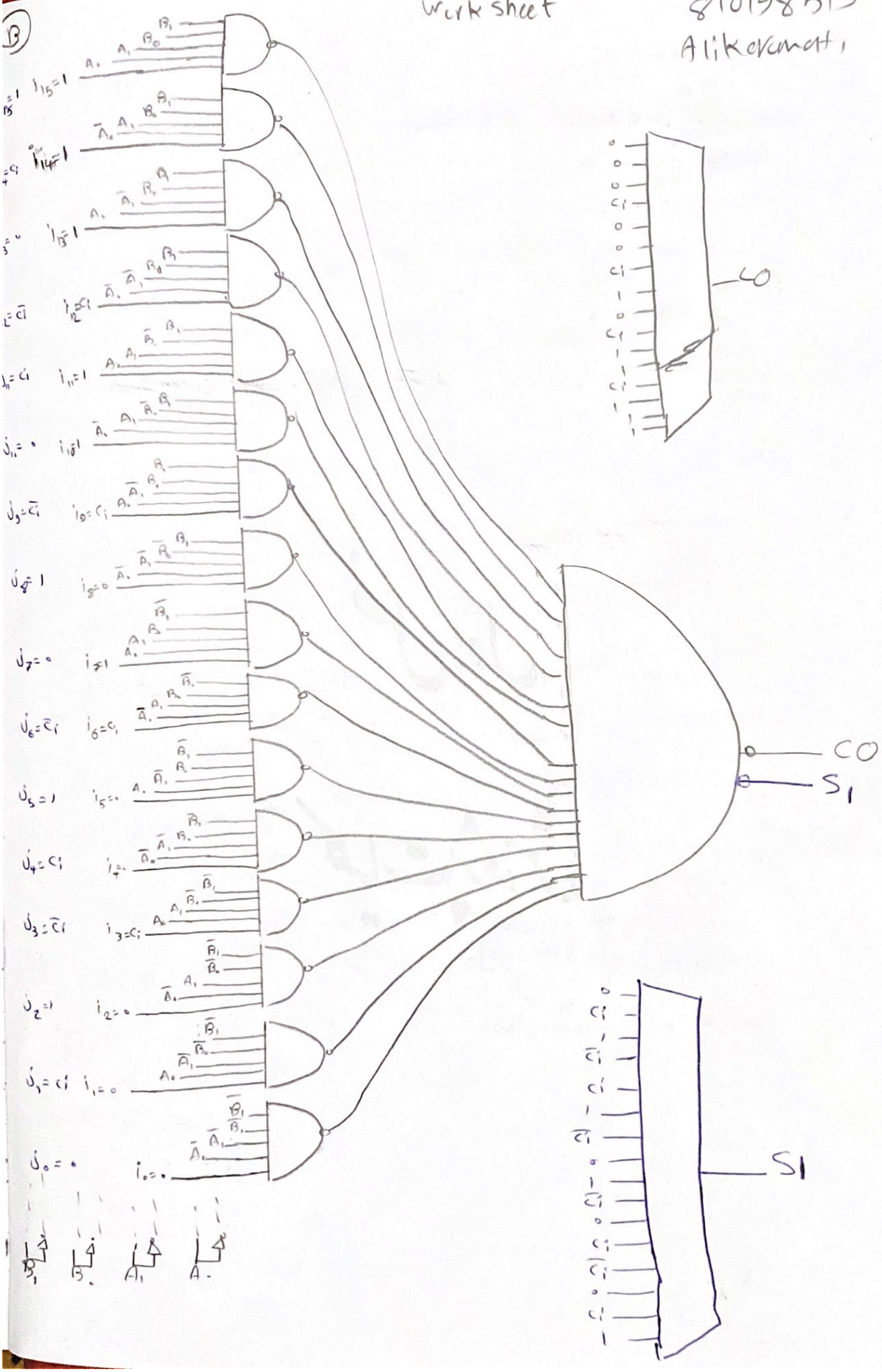


(C)

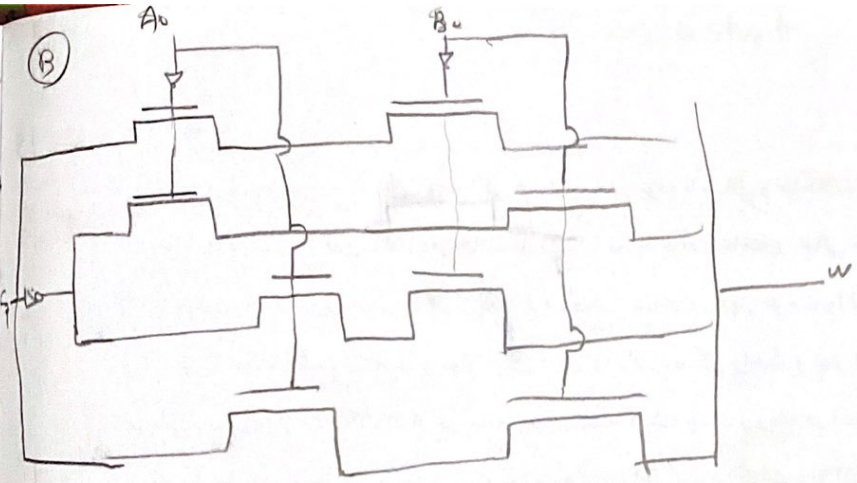


Work sheet

8101985I9
Alikeramati



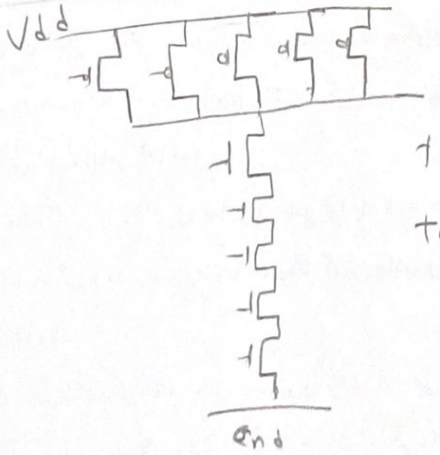
(B)



to1: $A_0 B_0 C_i$: 000 → 110 17ns

to0: $A_0 B_0 C_i$: 001 → 101 17ns

NAND 5 input



nmost.2

t.L = 5 x 5 = 25

to0 = 5 x 4 = 20 (nmost.0)

AND same as NAND 5 input for NAND 16 input we have:

to1: 16 x 5 = 80

to0 = 16 x 4 = 64

110 → 111

worst = 112

To1 = 80 + 25 + 7 = 112

To0 = 64 + 25 + 7 = 96

Alikeramati Worksheet 810198519

Part C

Karnaugh map of S_0:

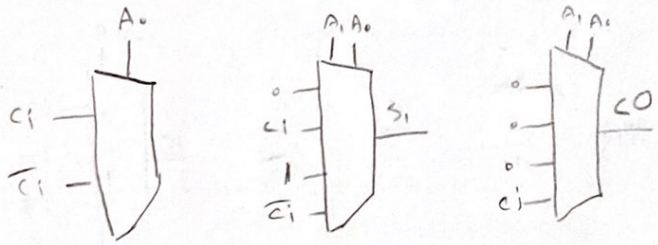
C_i \ A_0	0	1
0	0	1
1	1	0

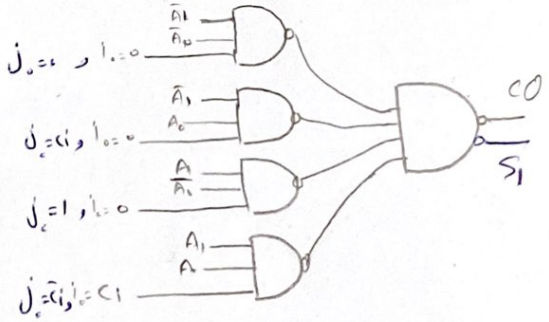
Karnaugh map of S_1:

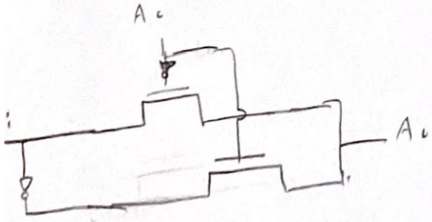
C_i \ A_1A_0	00	01	11	10
0	0	0	1	1
1	0	1	0	1

Karnaugh map of CO:

C_i \ A_1A_0	00	01	11	10
0	0	0	0	0
1	0	0	1	0







$T_c 1$: $00 \rightarrow 10$ $7+5=12$

$T_c 0$: $01 \rightarrow 11$ $7+5=12$

3 input NAND: $T_c 1 = 3 \times 5 = 15$

$T_c 0 = 3 \times 4 = 12$

4 input NAND $T_c 1 = 4 \times 5 = 20$

$T_c 0 = 4 \times 4 = 16$

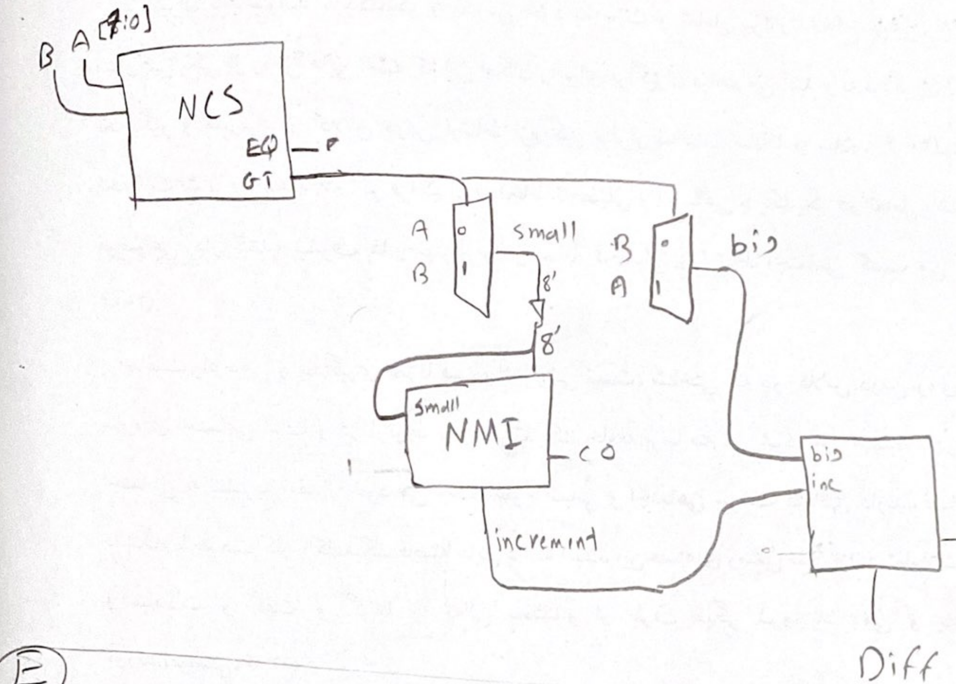
$\Rightarrow T_c 1 = 20 + 15 + 7 = 42$

$T_c 0 = 16 + 15 + 7 = 38$

Worst: 156

810198519

D



E