ENCS2110

Assignment No.1

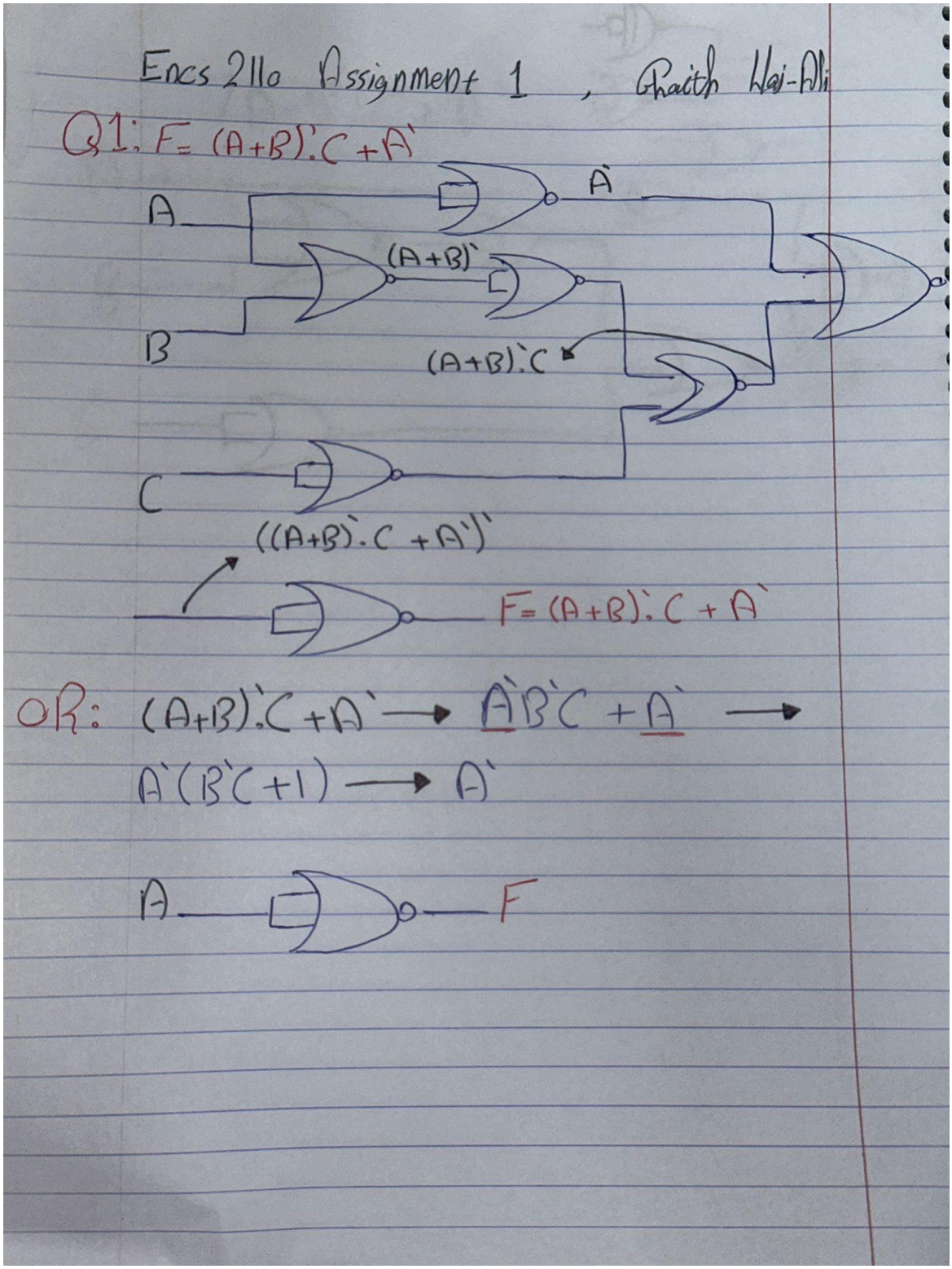
08-30-2025

Instructor: Dr. Nasser Ismael

TA: Raneem

Section: 3

Q1:


Encs 211o Assignment 1 , Ghaith Wai-Ali
Q1: F= (A+B)`.C +A`
A
B
C
A`
(A+B)`
(A+B)`.C
((A+B)`.C +A`)`
F= (A+B)`. C + A`
OR: (A+B)`.C +A` → A`B`C +A` →
A`(B`C +1) → A`
A
F

Q2+3:

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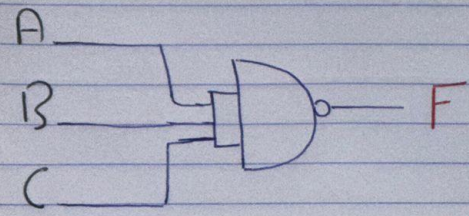
Q2: $F = (AB)' + (BC)$

$(AB)' \longrightarrow A' + B'$

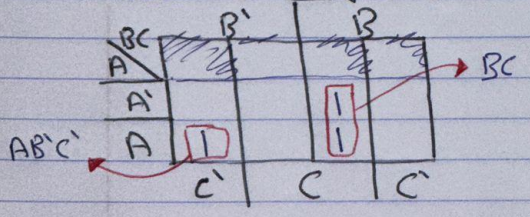
$(BC)' \longrightarrow B' + C' \quad \therefore F = A' + B' + C'$

$\longrightarrow F = (ABC)'$



Q3: a) $F1 = A'BC + AB'C' + ABC$

$\therefore F1 = \sum_{m3,\ m4,\ m7} (3, 4, 7)$



$\therefore F1 = AB'C' + BC.$

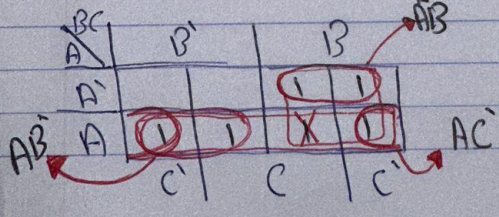
b) $F2 = A'B + AC' + AB'C$

$= A'B(C + C') + A(B + B')C' + AB'C$

$= A'BC + A'BC' + ABC' + AB'C' + AB'C$

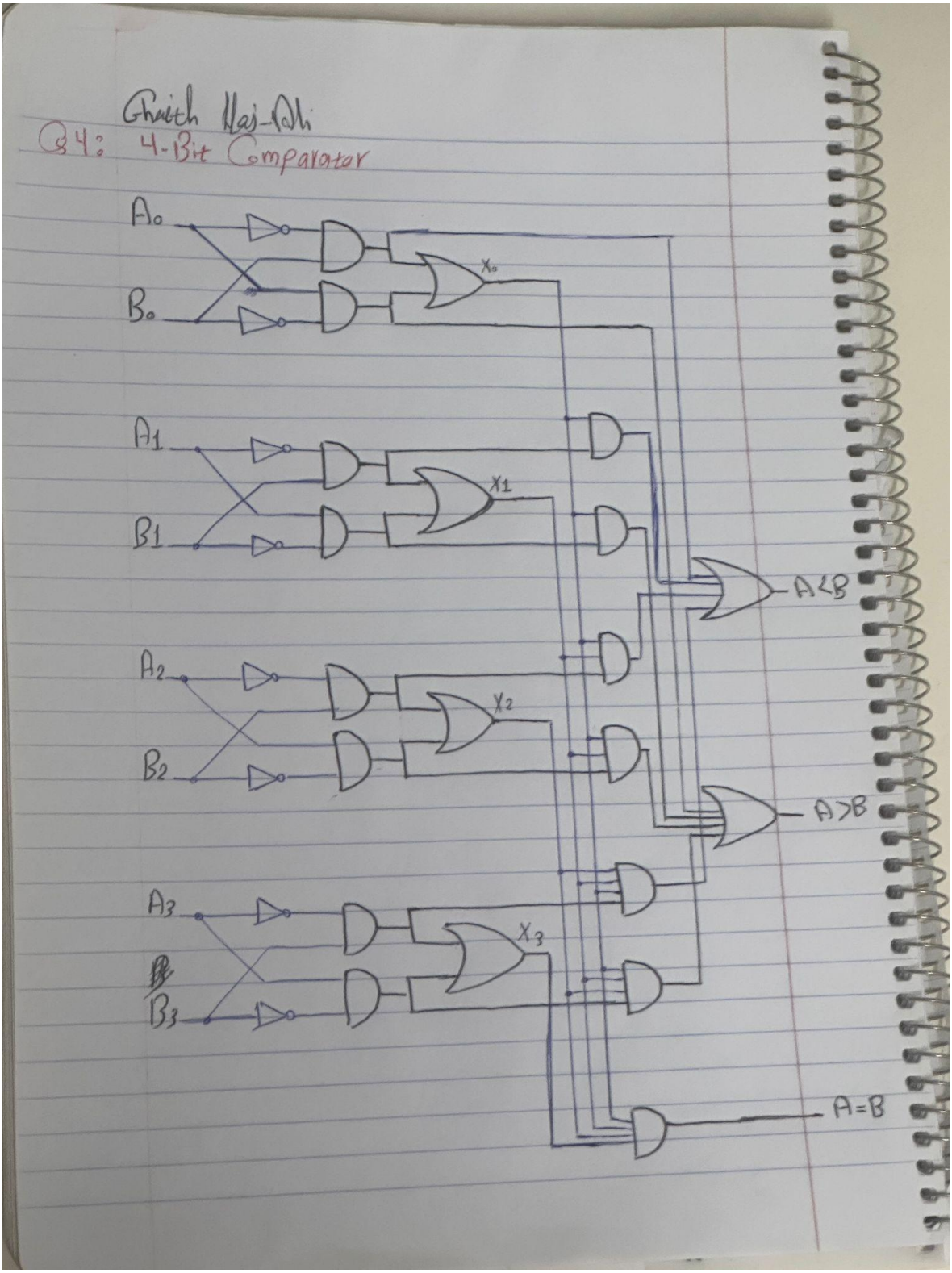
$m3 + m2 + m6 + m4 + m5$

$\therefore F2 = \sum (2, 3, 4, 5, 6)$



$\therefore F2 = \cancel{A + B}\ AB' + A'B + AC'$

Q4: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Q4: 4-Bit Comparator
A0
B0
X0
A1
B1
X1
A2
B2
X2
A3
B3
X3
A<B
A>B
A=B

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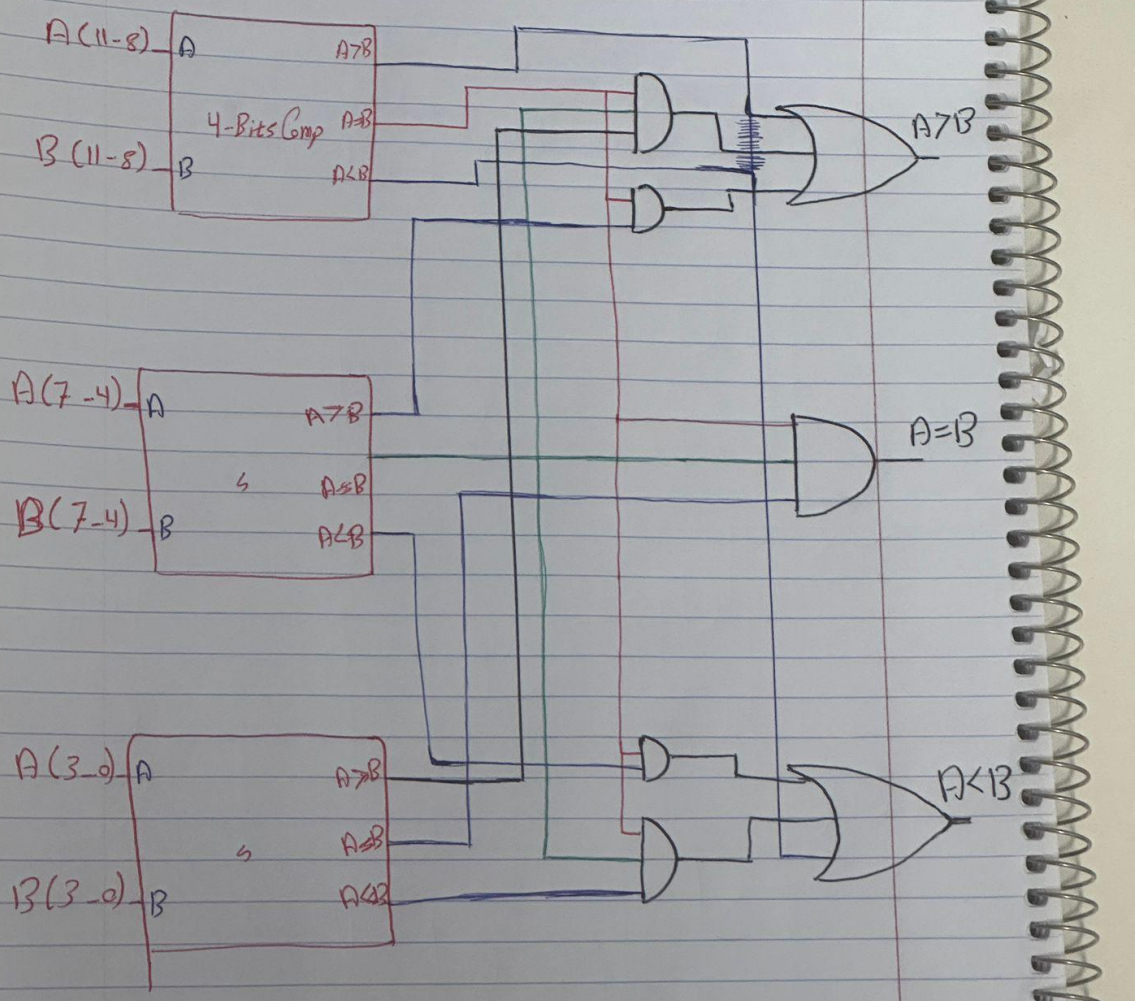
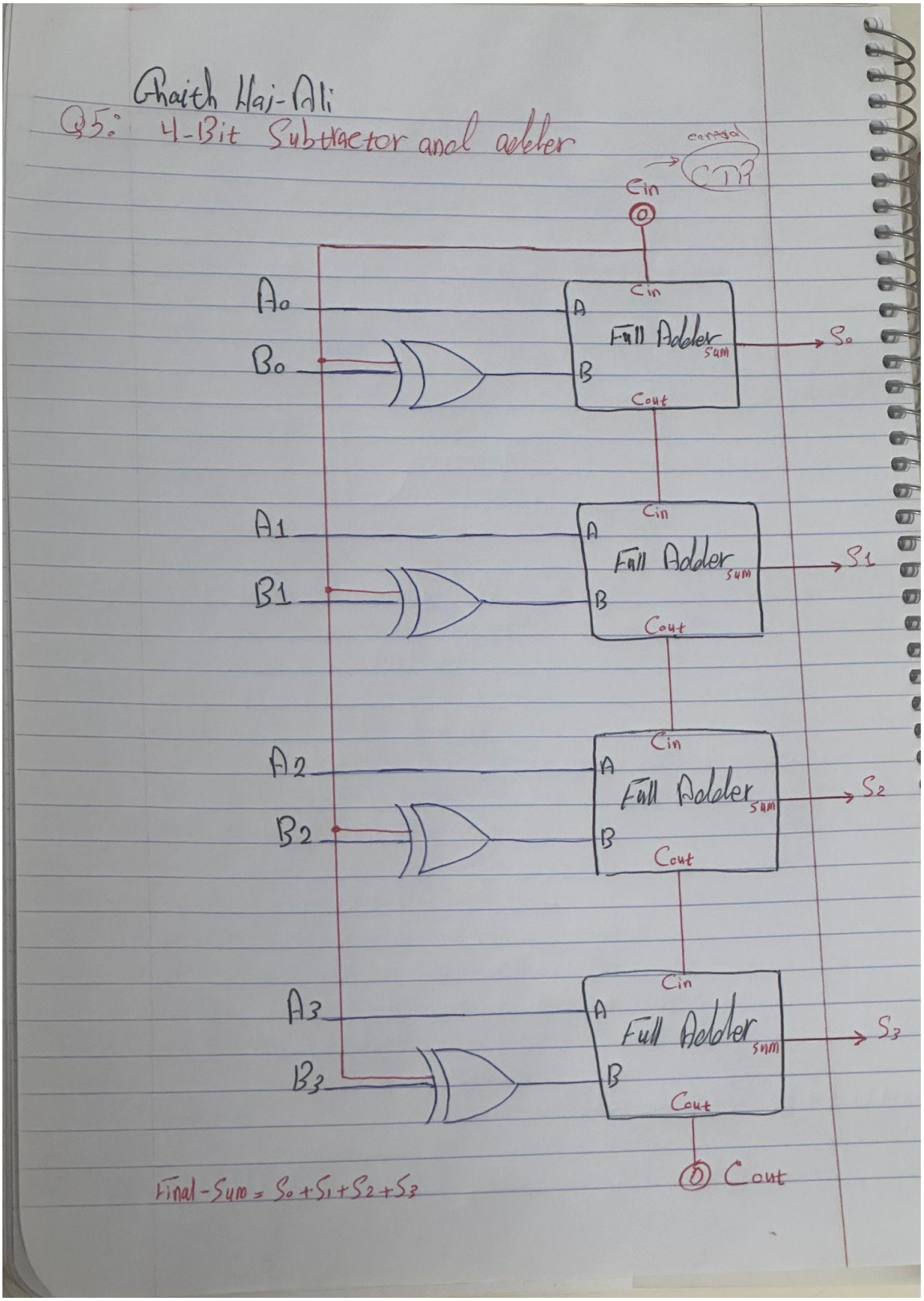


Q5: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Q5: 4-Bit Subtractor and adder
control
CTRL
Cin
0
A0
B0
A
B
Full Adder
Sum
Cout
S0
A1
B1
S1
A2
B2
S2
A3
B3
S3
1
Cout
Final-Sum = S0+S1+S2+S3