BIRZEIT UNIVERSITY

Faculty of Engineering and Technology

Department of Electrical and Computer Engineering

DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION LABORATORY (ENCS2110)

“Pre-Lab3”

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Section: 4

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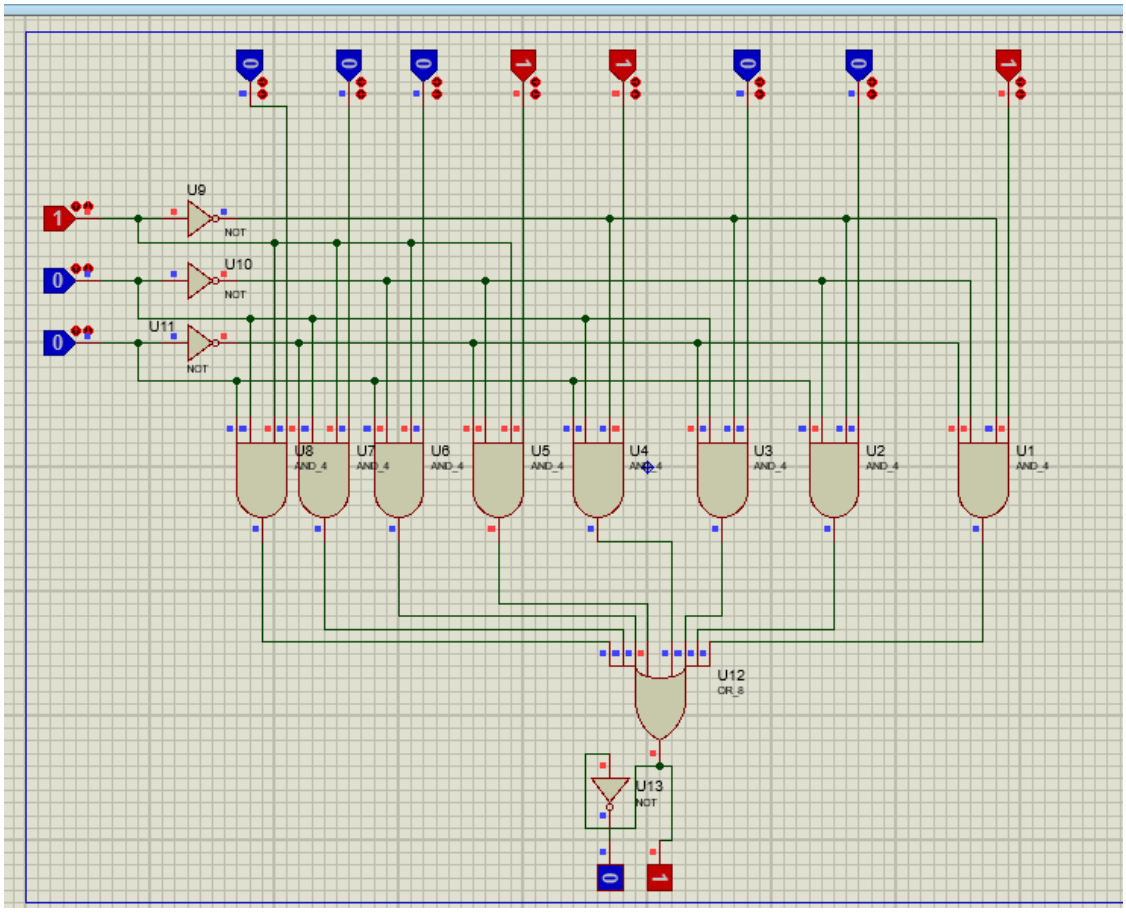
Design a circuit which uses an SN74151 to implement a sum-of-products expression, as follows: a) Convert the following expression into summation form (i.e., F (A, B, C) =∑ (…)): $Y = f(A, B, C) = A\bar{B} + \overline{B}C$ b) Sketch on Figure 3.1 the input connections necessary to implement the function in part (a). Observe that the inputs are connected to 0 or 1 depending on the value of the function for that min ter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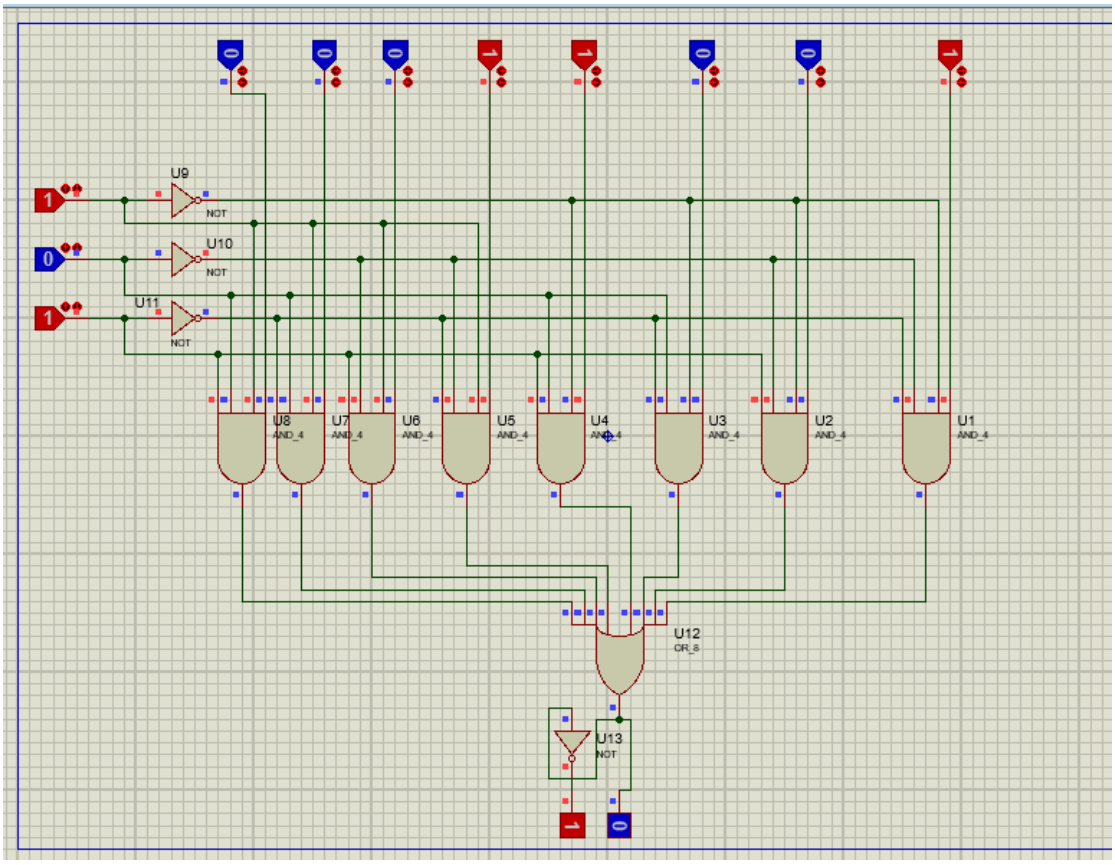
U10
NOT
U11
NOT
U8
AND_4
U7
AND_4
U6
AND_4
U5
AND_4
U4
AND_4
U3
AND_4
U2
AND_4
U1
AND_4
U12
OR_8
U13
NOT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NOT
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AND_4
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AND_4
U6
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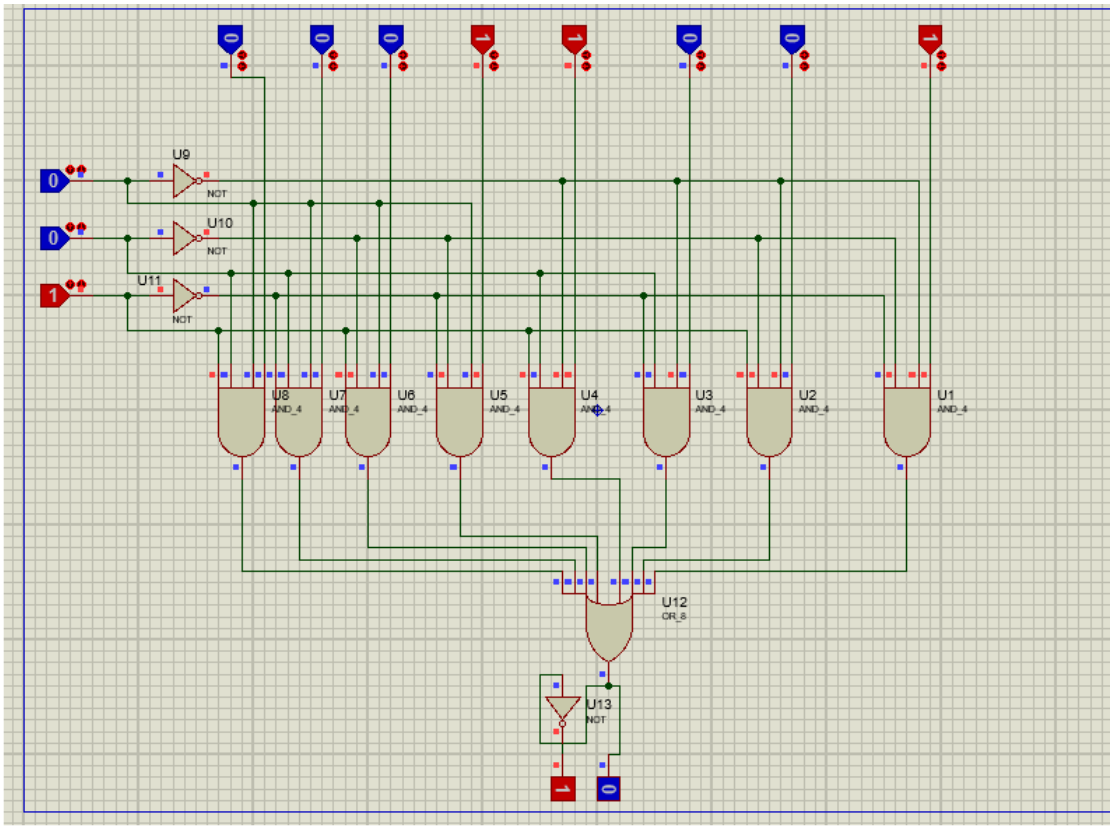
U3
AND_4
U2
AND_4
U1
AND_4
U12
OR_8
U13
NOT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NOT
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NOT
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NOT
U8
AND_4
U7
AND_4
U6
AND_4
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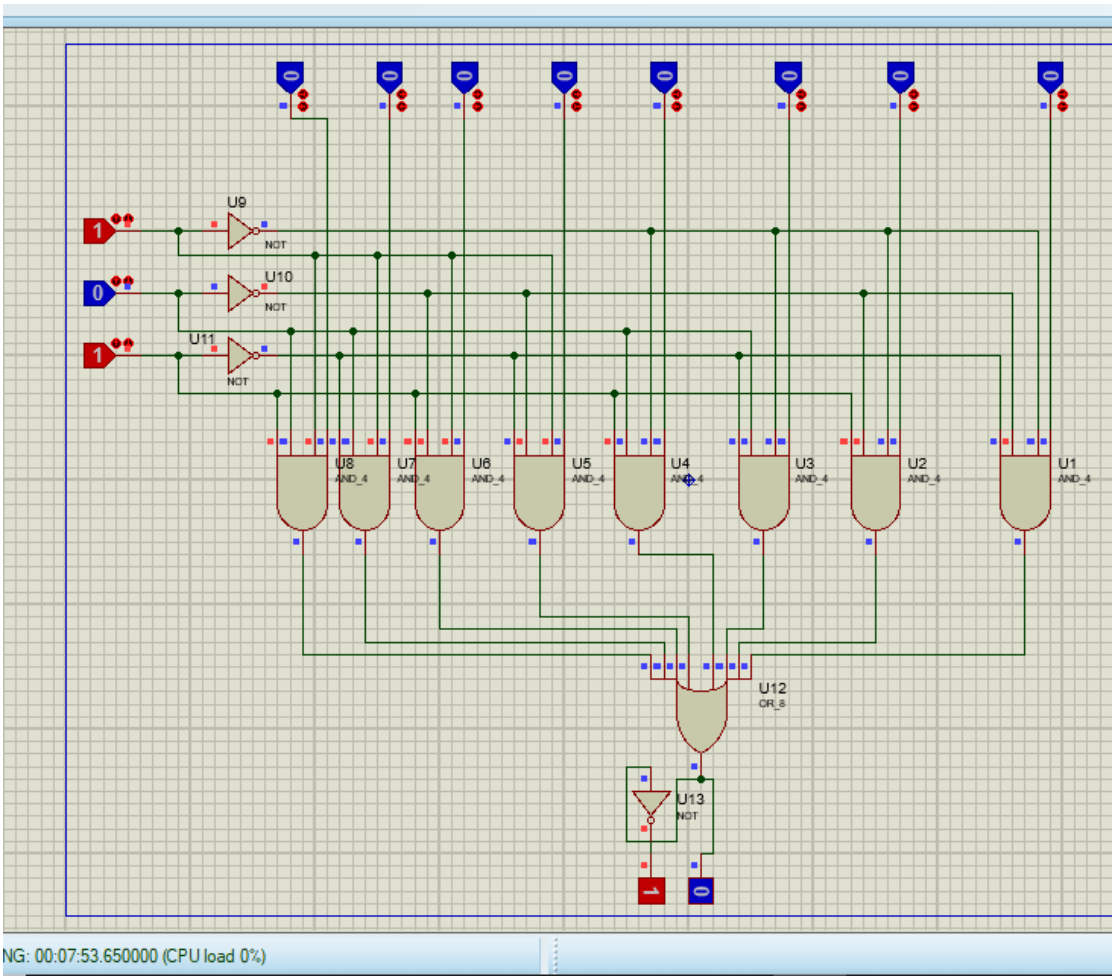
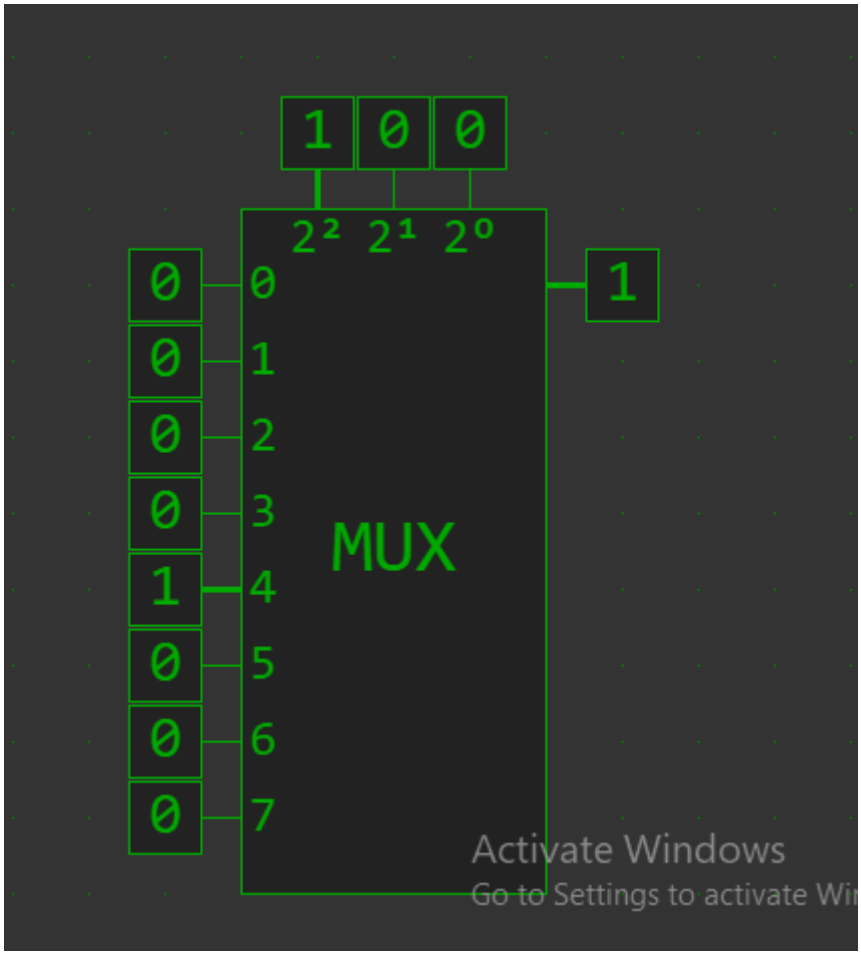
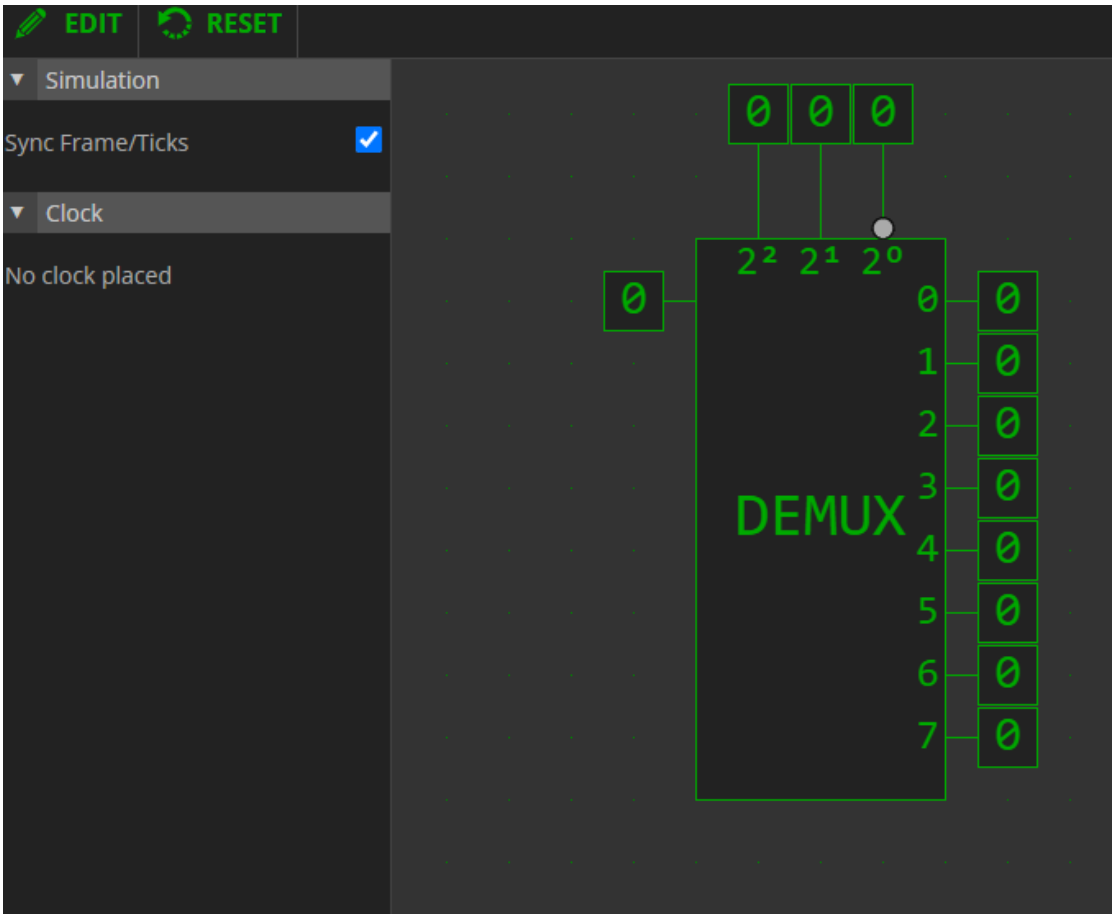
U3
AND_4
U2
AND_4
U1
AND_4
U12
OR_8
U13
NOT

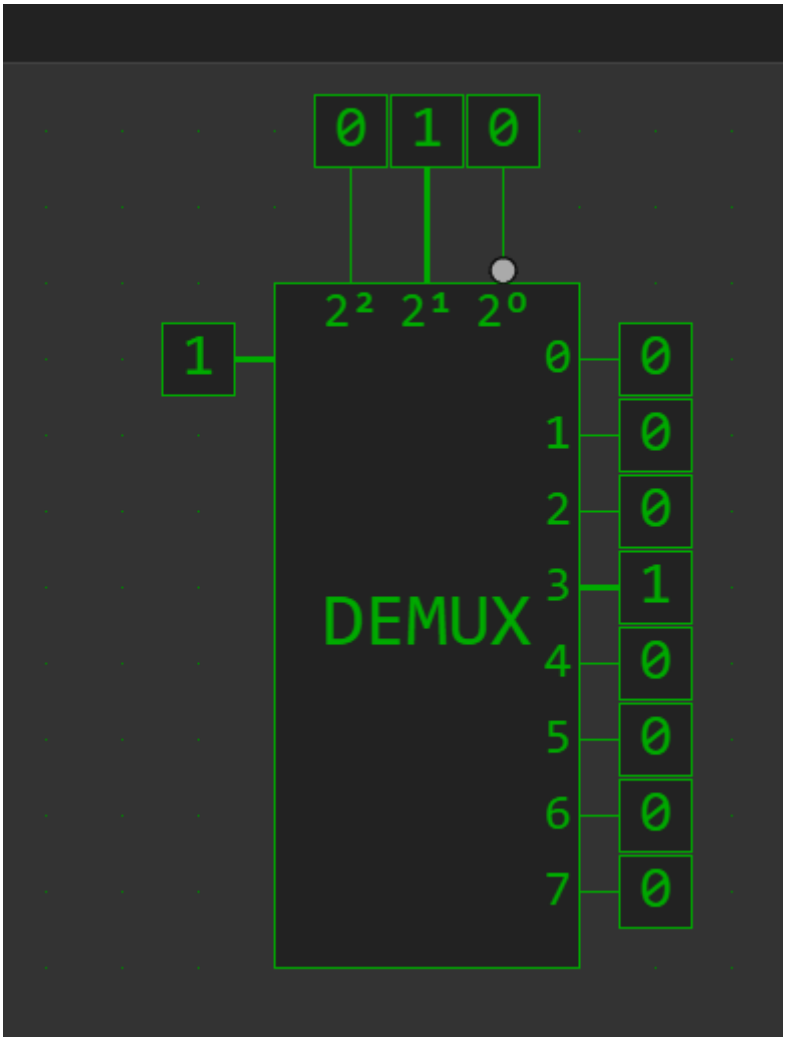

U9
NOT
U10
NOT
U11
NOT
U8
AND_4
U7
AND_4
U6
AND_4
U5
AND_4
U4
AND_4
U3
AND_4
U2
AND_4
U1
AND_4
U12
OR_8
U13
NOT
NG: 00:07:53.650000 (CPU load 0%)



Select Data Inputs			Output
S_2	S_1	S_0	Y
0	0	0	D_0
0	0	1	D_1
0	1	0	D_2
0	1	1	D_3
1	0	0	D_4
1	0	1	D_5
1	1	0	D_6
1	1	1	D_7

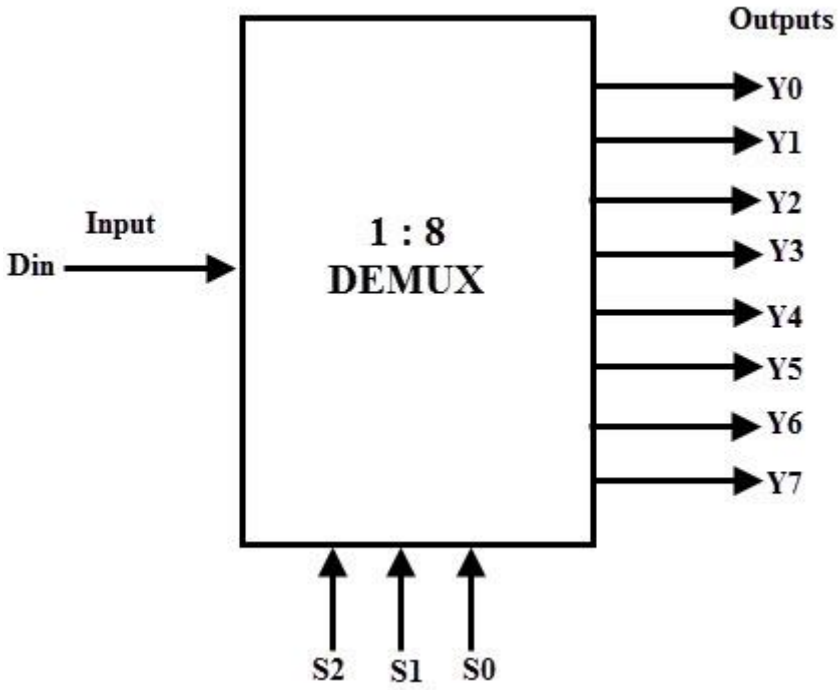
Design a circuit which uses an SN74138 Demultiplexer to implement a sum- of-products expression, as follows: a) Convert the following expression into summation (Sum of Products –SOP-) form (i.e. F(A,B,C)=∑(…)): $Y = f(A, B, C) = \bar{A}BC + B\bar{C}$





Example demultiplexer

INPUTS			Output							
S_2	S_1	S_0	Y_7	Y_6	Y_5	Y_4	Y_3	Y_2	Y_1	Y_0
0	0	0	0	0	0	0	0	0	0	A
0	0	1	0	0	0	0	0	0	A	0
0	1	0	0	0	0	0	0	A	0	0
0	1	1	0	0	0	0	A	0	0	0
1	0	0	0	0	0	A	0	0	0	0
1	0	1	0	0	A	0	0	0	0	0
1	1	0	0	A	0	0	0	0	0	0
1	1	1	A	0	0	0	0	0	0	0


Outputs
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Input
Din
1 : 8
DEMUX
S2
S1
S0