

Set-A

Question 1:

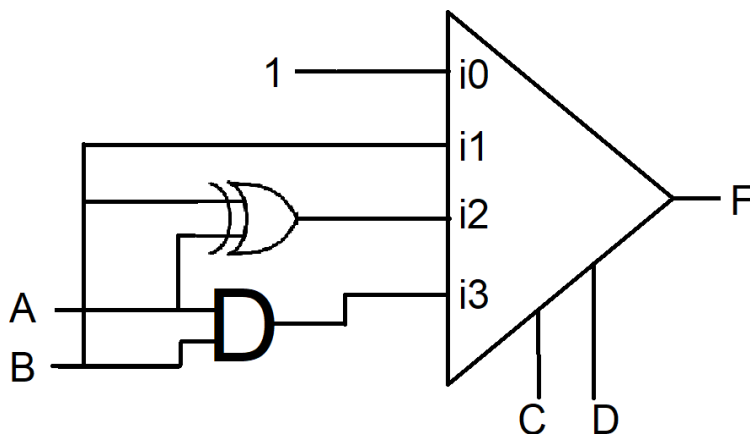
Build the following function using 4x1 Mux: $F = \Sigma (0,4,5,6,8,10,12,13,15)$

NB: Your circuit should be cost efficient, meaning you have to use the lowest number of components possible. You can use only 4x1 Mux.

Answer:

	I0	I1	I2	I3
A'B'	0	1	2	3
A'B	4	5	6	7
AB'	8	9	10	11
AB	12	13	14	15
Values	1	$A'B + AB$ $= B(A' + A)$ $= B$	$A'B + AB'$ $= A \text{ XOR } B$	AB

Here, A is the MSB and D is the LSB



Set-B

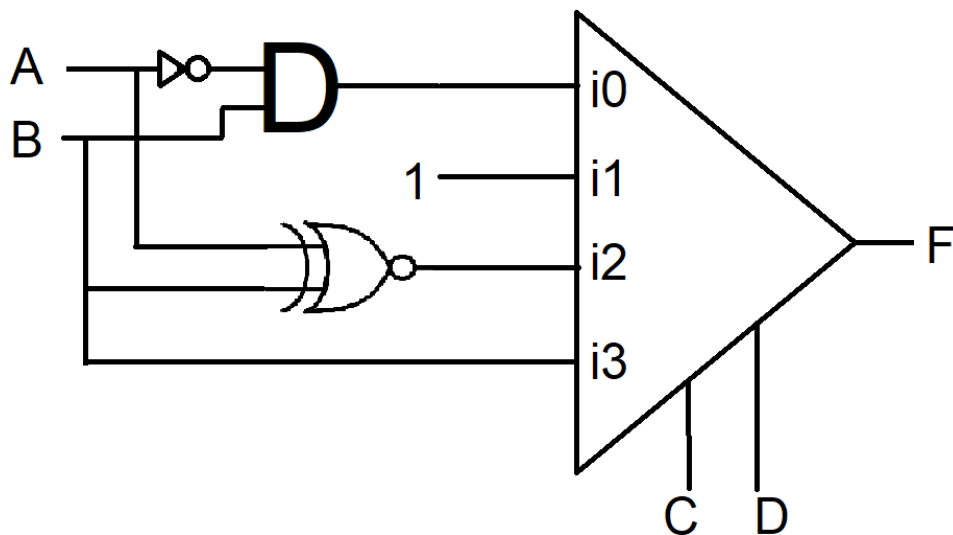
Question 1:

Build the following function using 4x1 Mux: $F = \Sigma (1,2,4,5,7,9,13,14,15)$

NB: Your circuit should be cost efficient, meaning you have to use the lowest number of components possible.

Answer:

	I0	I1	I2	I3
A'B'	0	1	2	3
A'B	4	5	6	7
AB'	8	9	10	11
AB	12	13	14	15
Values	A'B	1	A'B' + AB = A XNOR B	A'B + AB = B (A'+A) = B



Here, A is the MSB and D is the LSB

Set-C

Question 1:

Build the following function using both 4x1 & 2x1 Mux: $F = \Sigma (0,4,5,6,8,10,12,13,15)$

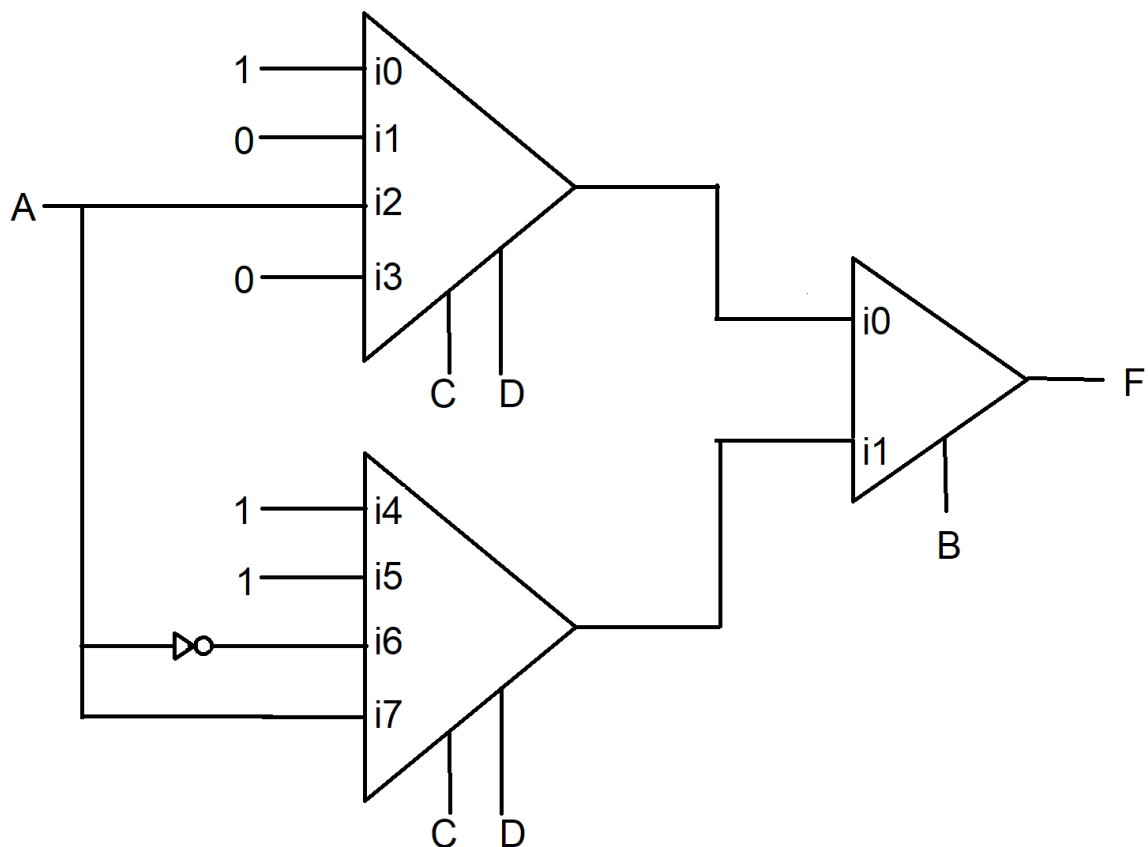
NB: Your circuit should be cost efficient, meaning you have to use the lowest number of components possible. You must use both 4x1 and 2x1 mux.

Answer:

Making an 8x1 MUX:

	I0	I1	I2	I3	I4	I5	I6	I7
A'	0	1	2	3	4	5	6	7
A	8	9	10	11	12	13	14	15
Values	1	0	A	0	1	1	A'	A

Here, A is the MSB and D is the LSB



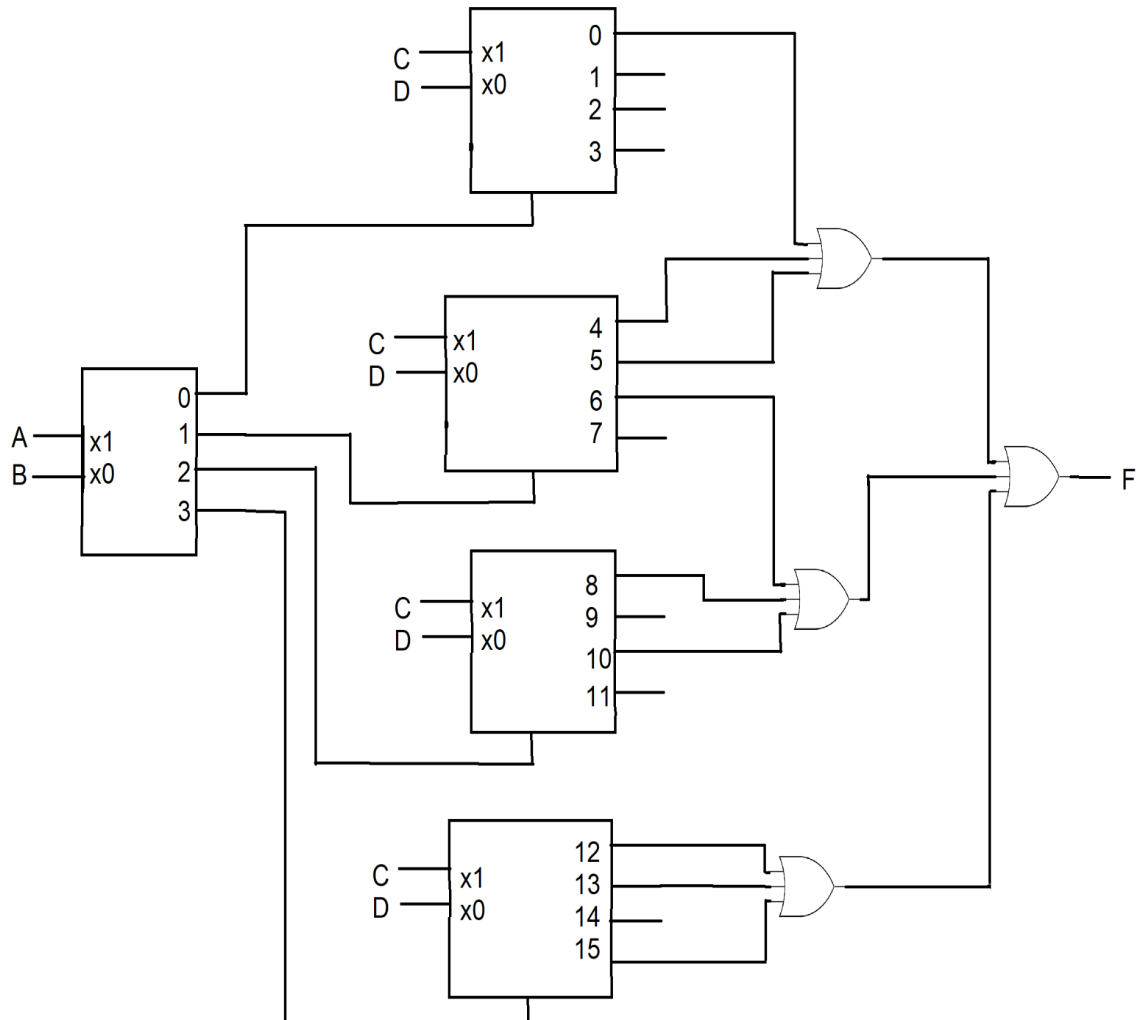
Set-D

Question 1:

a) Build the following function using 2:4 decoder only: $F = \Sigma (0,4,5,6,8,10,12,13,15)$

NB: Your circuit should be cost efficient, meaning you have to use the lowest number of components possible.

Here, A is the MSB and D is the LSB



Set-E

Question 1:

Build the following function using 3:8 decoder only: $F = \Sigma (0,4,5,6,8,10,12,13,15,19,24,27,28,29)$

NB: Your circuit should be cost efficient, meaning you have to use the lowest number of components possible.

Here, A is the MSB and E is the LSB

