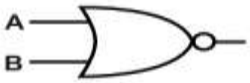
Cambridge International AS & A Level

COMPUTER SCIENCE **9618/12**

Paper 1 Theory Fundamentals **October/November 2021**

2 **(a)** Complete the truth table for each of the following two logic gates.

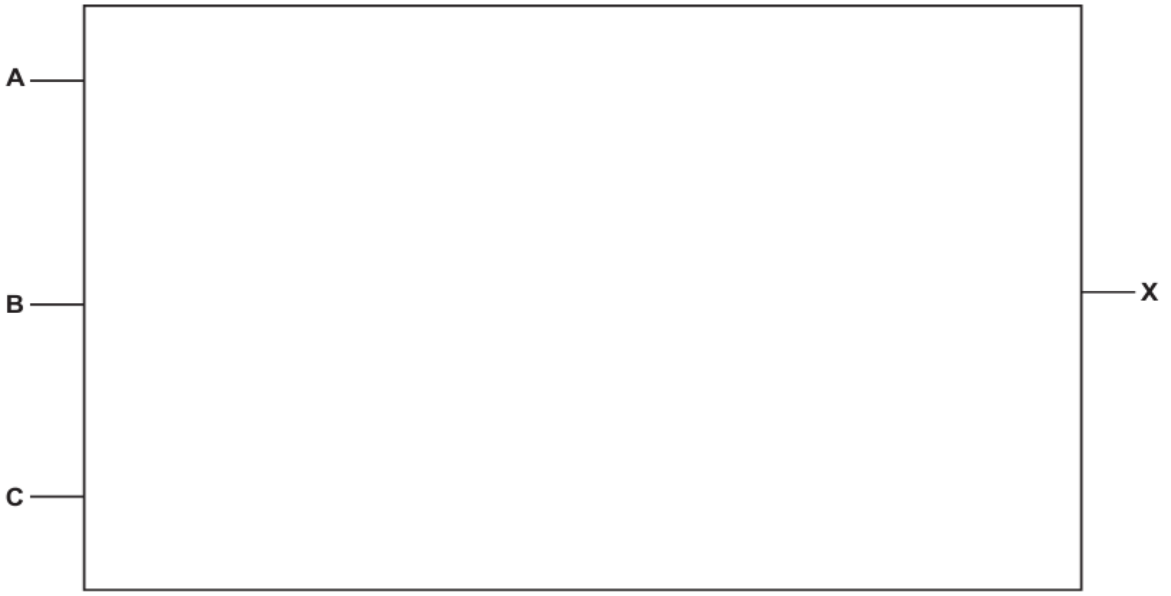


A	B	Output
0	0	
0	1	
1	0	
1	1	

A	B	Output
0	0	
0	1	
1	0	
1	1	

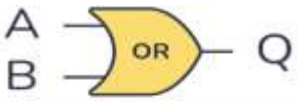
(b) Draw a logic circuit for the following logic expression.

X = NOT(NOT(**A** AND **B**)AND **C**)

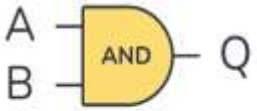


[2]

Solution:



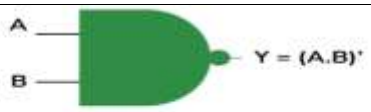
A	B	Q
0	0	0
0	1	1
1	0	1
1	1	1



A	B	Q
0	0	0
0	1	0
1	0	0
1	1	1

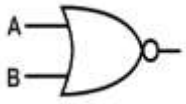
Truth Table

Input A	Input B	0 = (A + B)'
0	0	1
0	1	0
1	0	0
1	1	0

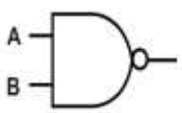


Truth Table

Input A	Input B	Y = (A.B)'
0	0	1
0	1	1
1	0	1
1	1	0



A	B	Output
0	0	1
0	1	0
1	0	0
1	1	0



A	B	Output
0	0	1
0	1	1
1	0	1
1	1	0

(b)

X = NOT(NOT(A AND B) AND C)

Given logical expression has two parts:

NOT(A AND B),

C

Passing through AND Gate

As we have NOT of both expression so we have a circuit as given below: