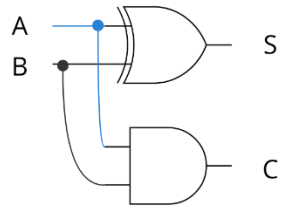
1.4.3 Adders Questions

2. This diagram shows the logic circuit for a **half** adder.



Complete the truth table for this half adder circuit.

A	B	S	C (Out)
0	0		
0	1		
1	0		
1	1		

[4]

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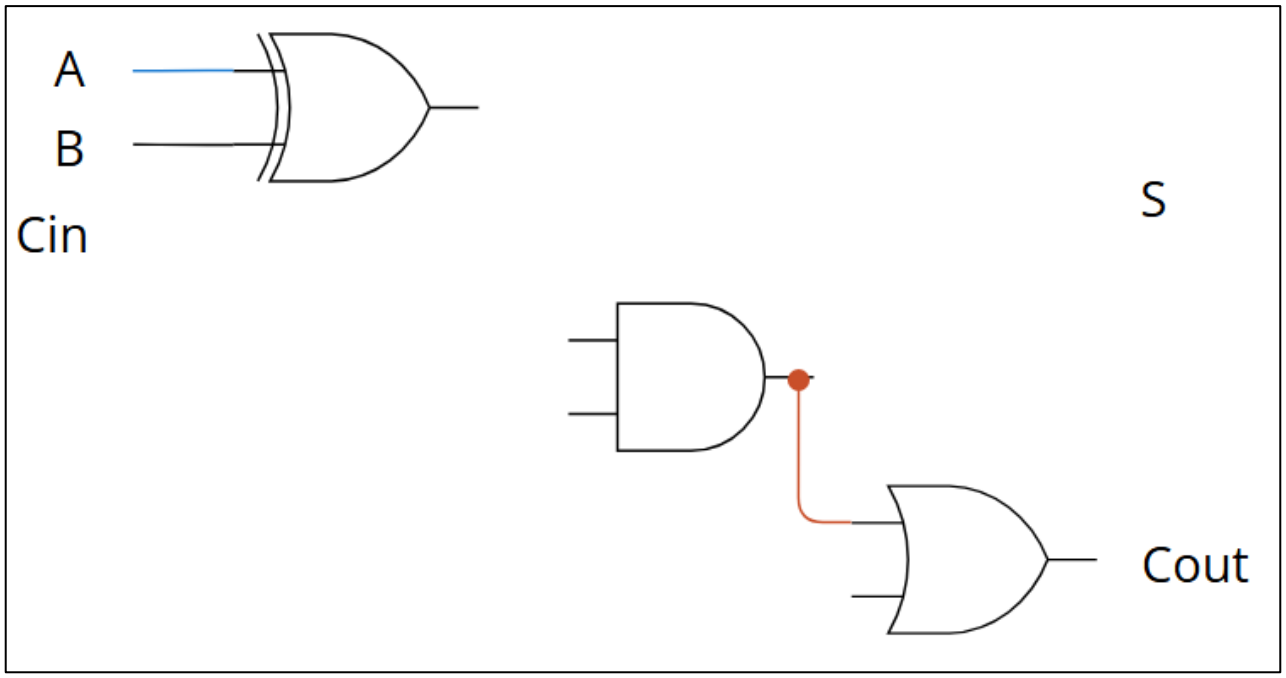
2. The diagram below has missing components of a logic circuit for a full adder. Complete the missing components for a full adder circuit.



i. Complete the table for a full adder circuit.

[5]

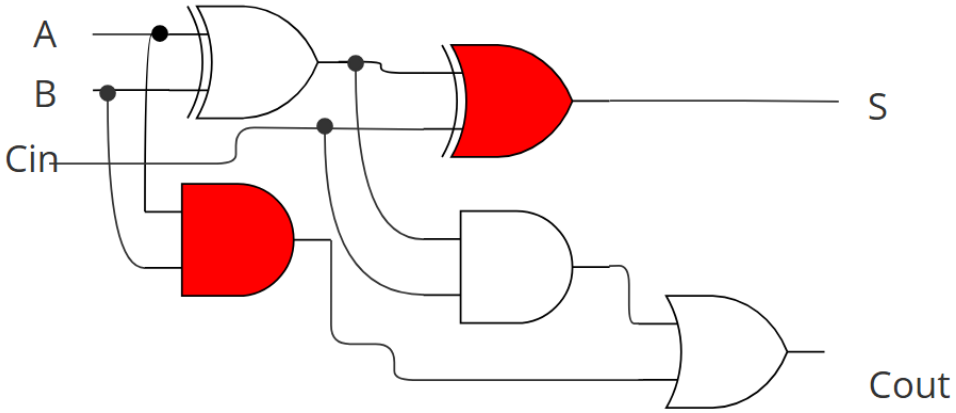
ii. Complete the truth table for the full adder circuit

Inputs			Outputs	
A	B	Cin	Cout	S
0	0			
0	0			
0	1			
0	1			
1	0			
1	0			
1	1			
1	1			

[3]

END OF QUESTION PAPER

Mark scheme

<table>
<tr><th colspan="3">Question</th><th>Answer/Indicative content</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1</td><td></td><td></td><td>1 mark for each correct row.
<table><tr><th>A</th><th>B</th><th>S</th><th>C</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr></table></td><td>4</td><td></td></tr>
<tr><td>2</td><td></td><td>I</td><td> 

1 mark for each missing component (in red)
1 mark for correctly drawing both lines</td><td>3</td><td></td></tr>
</table>

<table>
<tr>
<td></td><td></td><td>ii</td>
<td>
<table>
<tr><th colspan="3">Inputs</th><th colspan="2">Outputs</th></tr>
<tr><th>A</th><th>B</th><th>Cin</th><th>Cout</th><th>S</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr>
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<tr><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
</table>

1 mark for correctly filling out Cin column
1 mark for correctly filling out Cout Column
1 mark for correctly filling out S column

</td>
<td>3</td><td></td>
</tr>
<tr><td></td><td></td><td></td><td>Total</td><td>10</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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