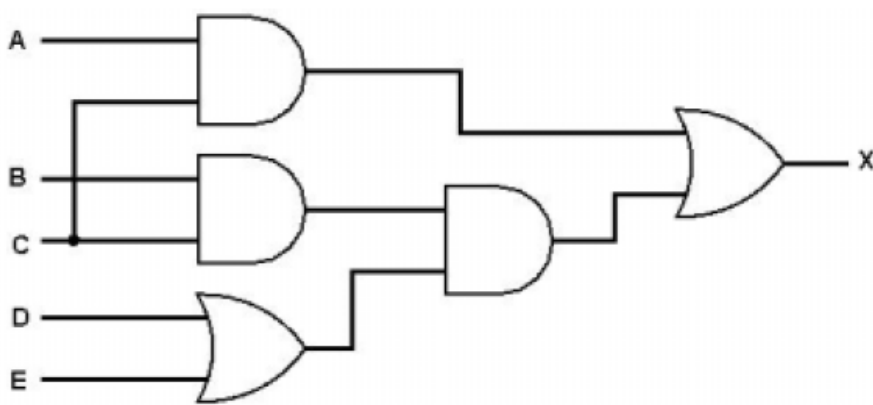
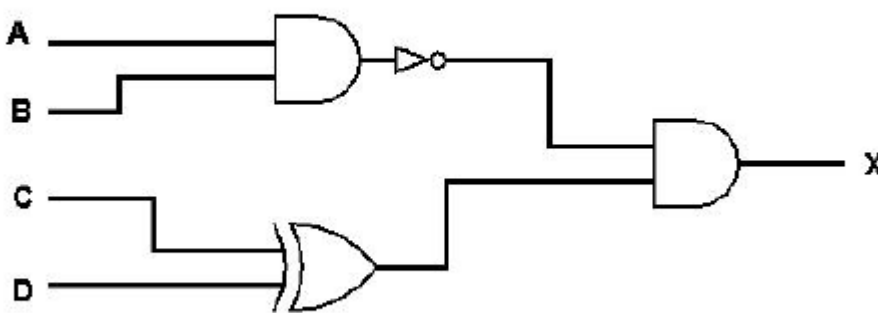


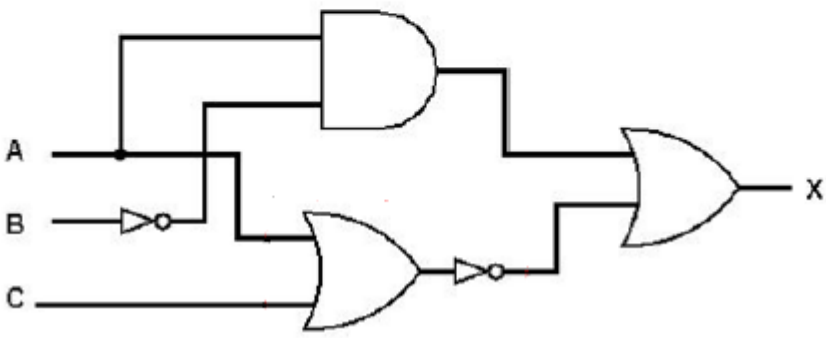
## Answer Chapter 4: Logic Gates and Logic Circuits

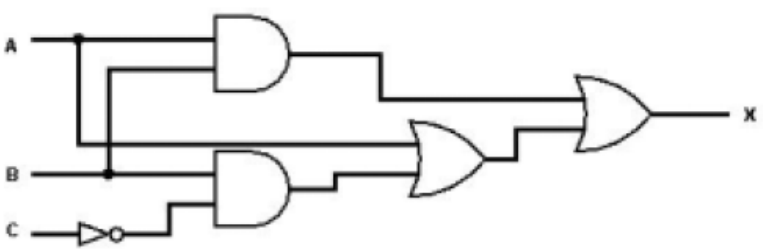
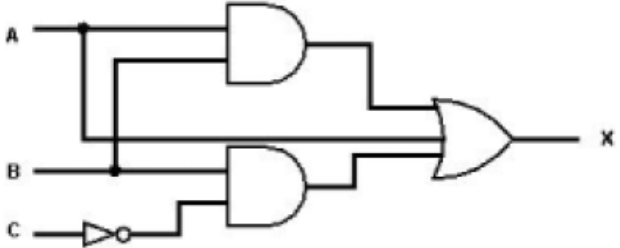
	<i>Exam</i>	<i>Question</i>
1	<a href="#">October/November 2019 - 9608/11</a>	Q3
2	<a href="#">October/November 2019 - 9608/12</a>	Q2
3	<a href="#">October/November 2019 - 9608/13</a>	Q5
4	May/June 2019 - 9608/11	-
5	<a href="#">May/June 2019 - 9608/12</a>	Q6
6	May/June 2019 - 9608/13	-
7	October/November 2018 - 9608/11	-
8	October/November 2018 - 9608/12	-
9	<a href="#">October/November 2018 - 9608/13</a>	Q8
10	<a href="#">May/June 2018 - 9608/11</a>	Q4
11	<a href="#">May/June 2018 - 9608/12</a>	Q2
12	<a href="#">May/June 2018 - 9608/13</a>	Q5
13	October/November 2018 - 9608/11	-
14	October/November 2018 - 9608/12	-
15	October/November 2018 - 9608/13	-
16	May/June 2017 - 9608/11	-
17	May/June 2017 - 9608/12	-
18	May/June 2017 - 9608/13	-

Question	Answer	Marks
3(a)	<p><b>1 mark</b> for each gate</p> <p> <input type="checkbox"/> A <b>AND</b> C  <input type="checkbox"/> B <b>AND</b> C  <input type="checkbox"/> D <b>OR</b> E  <input type="checkbox"/> (B <b>AND</b> C) <b>AND</b> (D <b>OR</b> E)  <input type="checkbox"/> Final <b>OR</b> </p> 	<b>5</b>

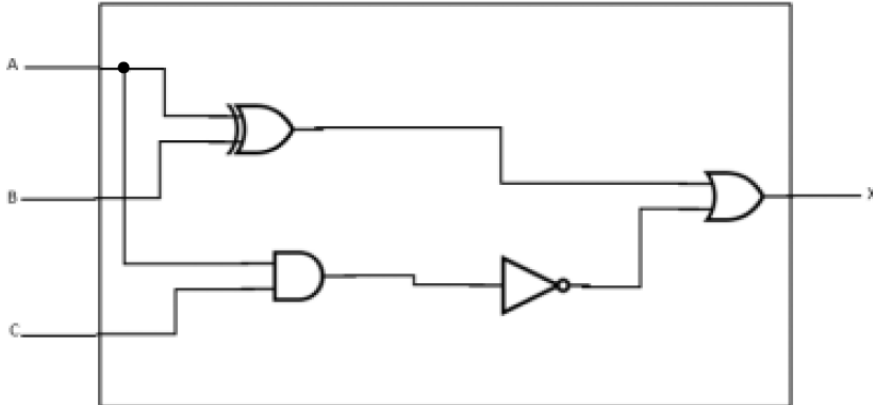
Question	Answer	Marks																																													
3(b)	<p><b>1 mark</b> for each pair of correct rows</p> <table><tr><th>A</th><th>B</th><th>C</th><th>Working space</th><th>X</th></tr><tr><td>0</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>1</td></tr></table>	A	B	C	Working space	X	0	0	0		0	0	0	1		1	0	1	0		1	0	1	1		0	1	0	0		0	1	0	1		1	1	1	0		0	1	1	1		1	4
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Question	Answer	Marks																																													
2(a)	<p>1 mark per gate</p> 	4																																													
2(b)	<p>1 mark for each pair of answers</p> <table><tr><th>A</th><th>B</th><th>C</th><th>Working space</th><th>X</th></tr><tr><td>0</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>0</td></tr></table>	A	B	C	Working space	X	0	0	0		1	0	0	1		1	0	1	0		1	0	1	1		1	1	0	0		1	1	0	1		1	1	1	0		1	1	1	1		0	4
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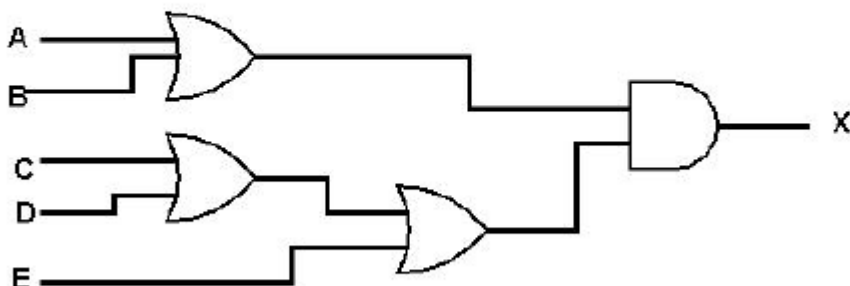
Question	Answer	Marks																																													
5(a)	<p>1 mark for each correct gate</p> <p><input type="checkbox"/> A OR C <input type="checkbox"/> NOT(A OR C) <input type="checkbox"/> NOT B <input type="checkbox"/> A AND NOT B <input type="checkbox"/> Final OR</p> 	5																																													
5(b)	<p>1 mark for each pair of rows</p> <table><tr><th>A</th><th>B</th><th>C</th><th>Working space</th><th>X</th></tr><tr><td>0</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>0</td></tr></table>	A	B	C	Working space	X	0	0	0		1	0	0	1		0	0	1	0		1	0	1	1		0	1	0	0		1	1	0	1		1	1	1	0		0	1	1	1		0	4
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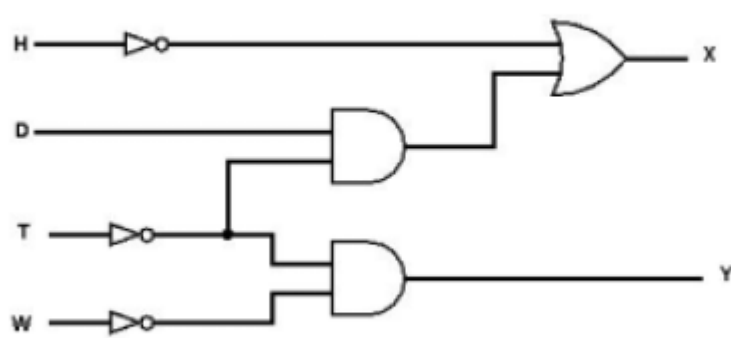
Question	Answer	Marks
6(a)	<p><b>1 mark</b> per gate      The OR gates may be re-sequenced</p>  <p>Alternatively: 3-input OR gate  <b>1 mark</b> for first three gates, and <b>2 marks</b> for 3-input OR gate</p> 	<b>5</b>

Question	Answer	Marks																																													
6(b)	<div>1 mark for each pair of rows (shaded)</div> <table><tr><th>A</th><th>B</th><th>C</th><th>Working Space</th><th>X</th></tr><tr><td>0</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>1</td></tr></table>	A	B	C	Working Space	X	0	0	0		0	0	0	1		0	0	1	0		1	0	1	1		0	1	0	0		1	1	0	1		1	1	1	0		1	1	1	1		1	4
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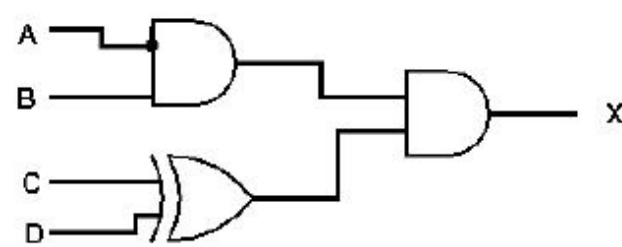
Question	Answer	Marks
8(a)	<p><b>1 mark</b> for each logic gate with the correct inputs</p> 	<b>4</b>

Question	Answer	Marks																																													
8(b)	<p>One mark for each correct pair of lines</p> <table><tr><th>A</th><th>B</th><th>C</th><th>Working Space</th><th>X</th></tr><tr><td>0</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>0</td></tr></table>	A	B	C	Working Space	X	0	0	0		1	0	0	1		1	0	1	0		1	0	1	1		1	1	0	0		1	1	0	1		1	1	1	0		1	1	1	1		0	4
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Question	Answer	Marks																																													
4(a)	<p>1 mark per bullet:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> A OR B</li><li><input type="checkbox"/> C OR D OR E</li><li><input type="checkbox"/> Final AND</li></ul> 	3																																													
4(b)	<p>1 mark for each correct pair of rows</p> <table><thead><tr><th>A</th><th>B</th><th>C</th><th>Working space</th><th>X</th></tr></thead><tbody><tr><td>0</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>1</td></tr></tbody></table>	A	B	C	Working space	X	0	0	0		0	0	0	1		1	0	1	0		1	0	1	1		0	1	0	0		1	1	0	1		1	1	1	0		1	1	1	1		1	4
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Question	Answer	Marks																																													
2(a)	<p>1 mark for each gate with the correct inputs. Final two gates must also have the correct output.</p> 	6																																													
2(b)	<p>One mark for each pair of rows.</p> <table><tr><th>A</th><th>B</th><th>C</th><th>Working space</th><th>X</th></tr><tr><td>0</td><td>0</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>0</td></tr></table>	A	B	C	Working space	X	0	0	0		1	0	0	1		1	0	1	0		1	0	1	1		0	1	0	0		0	1	0	1		0	1	1	0		0	1	1	1		0	4
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5(a)	<p>1 mark per correct gate with correct inputs</p> 	3																																													
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