

Name:

Class Teacher:

Date:



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# OCR J276

# GCSE Computer Science

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## *REVISION BOOKLET – MARK SCHEME*

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### 2.4 COMPUTATIONAL LOGIC

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#### **Content in J276 GCSE Computer Science:**

- 1.1 Systems Architecture
- 1.2 Memory
- 1.3 Storage
- 1.4 Wireless and Wired Networks
- 1.5 Network Topologies, Protocols and Layers
- 1.6 System Security
- 1.7 Systems Software
- 1.8 Ethical, Legal, Cultural and Environmental Concerns
- 2.1 Algorithms
- 2.2 Programming Techniques
- 2.3 Producing Robust Programs
- 2.4 Computational Logic
- 2.5 Translators and Facilities of Languages
- 2.6 Data Representation

# EXAM QUESTIONS

## QUESTION 1

Complete the truth table below for the Boolean statement  $p = \text{NOT}(A \text{ AND } B)$ .

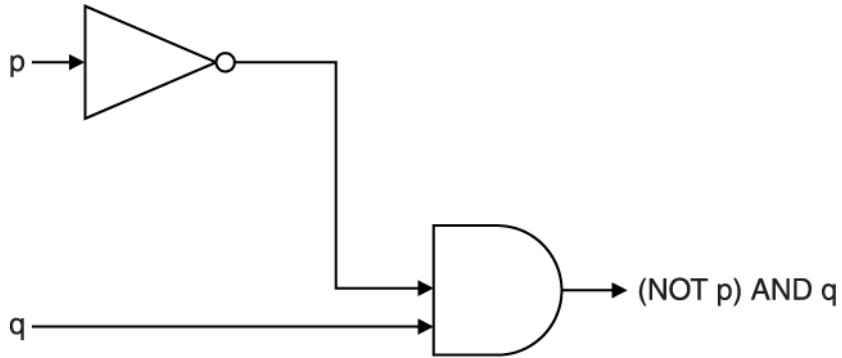
1			<b>A</b>	<b>B</b>	<b>P</b>				2	
					TRUE					
					TRUE					

## QUESTION 2

State the output of each of the following logic circuits for the inputs given.

2	a		• 1		2			
			• 0.				(respectively)	

Fig 1 is a circuit diagram.



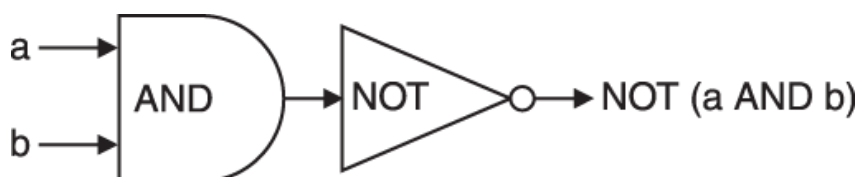
**Fig. 1**

Complete the truth table for Fig 1.

b	Correct answer:		3	<p><b>Examiner's Comments</b></p> <p>As expected, some weaker candidates were less able to work with the logic gates in combination</p>	
	p	q			(NOT p) AND q
	0	0			0
	1	0			0
	0	1			1
1	1	0			
Award marks for					
<ul style="list-style-type: none"> <li>• Correct missing input cases (0 1, 1 1 or 1 1, 0 1)</li> <li>• Output of 1 for 0 1</li> <li>• Output of 0 for 1 1.</li> </ul>					

### QUESTION 3

The following logic diagram shows the expression **NOT (a AND b)**.



Complete the missing boxes in the truth table below to show the value of NOT (a AND b) that will be output for each possible set of values of a and b.

3	<table border="1"> <thead> <tr> <th>A</th> <th>b</th> <th>NOT(a AND b)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> </tr> </tbody> </table>			A	b	NOT(a AND b)	0	0	1	0	1	1	1	0	1	1	1	0	4	<p>No follow through on row 4.</p> <p><b>Examiner's Comments</b></p> <p>This part was well answered by the majority of candidates, indicating that logic and truth tables – a core concept in computer science – is understood by most candidates.</p>
	A	b	NOT(a AND b)																	
	0	0	1																	
	0	1	1																	
	1	0	1																	
1	1	0																		
1 mark for row two and three. For row 4, 1 mark for correctly identifying 1 1 as the inputs, and 1 mark for the correct output 0)																				