



## **General Certificate of Education**

# **Computing 2510**

**COMP2    Computer Components, The  
Stored Program Concept and The  
Internet**

## **Mark Scheme**

*2009 examination - January series*

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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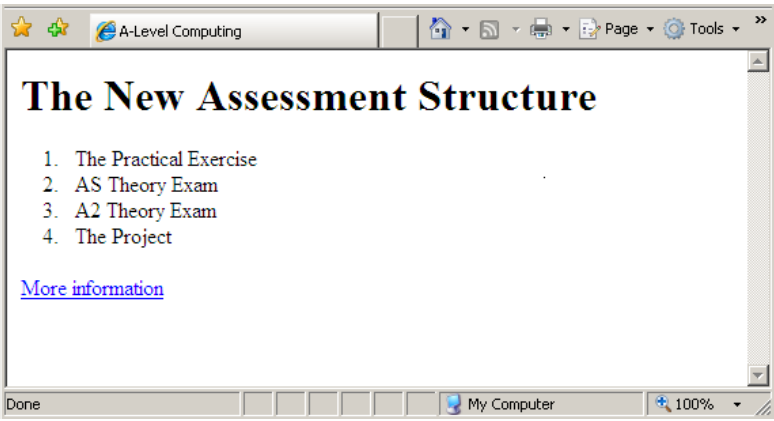
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Qu	Part	Sub Part	Marking Guidance	Mark
1	(a)		the <u>electrical/ physical</u> components/parts (electronic circuits) of the computer; <i>A by example (only acceptable on this occasion)</i>	1
	b		programs (sequences of instructions) which run on the hardware/computer;	1

2	<b>Software</b>		<b>Category (letter only)</b>	4
	Spreadsheet Software		D;	
	Anti-virus software		C; <i>Accept A</i>	
	Operating System		A; <i>If not given above</i>	
	Air Traffic Control Software		E // B;	

3	(a)		Load <b>B</b> ; Add #5; <i>A absolute addresses instead of A and B</i> Store <b>A</b> ;	3
	(b)	(i)	Assembler;	1
		(ii)	Compiler; <b>R</b> Interpreter	1

4	(a)		 <p>1 mark for title bar text 1 mark for heading (Heading font must be larger than rest of text) P1 for showing the comment 1 mark for numbering of list 1 mark for all list items underneath each other 1 mark for underlined hyperlink with correct text “More information” 1 mark for hyperlink as new paragraph Where layout not clear be guided by labels (can T.O. if label contradicts layout)</p>	6
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	(b)	(i)	text-align: center; color: blue; A colour instead of color A centre instead of center I punctuation (examining understanding not recall)	2
		(ii)	position of X within { } within the style tags;	1

5			<ol style="list-style-type: none"> <li>1. address of <u>next</u> instruction to be executed/fetched;</li> <li>2. (contents of Program Counter) copied into <u>Memory Address Register</u>;</li> <li>3. Contents of <u>Program Counter</u> incremented (by 1); <i>Accept incrementing by more than 1</i></li> <li>4. ...at the same time...; <i>(only give a mark if between correct statements)</i></li> <li>5. instruction/data held at that address is placed in the <u>Memory Buffer Register</u>;</li> <li>6. Contents of Memory Buffer Register copied into <u>Current Instruction Register</u>;</li> <li>7. <u>Instruction</u> held in Current Instruction Register is decoded;</li> <li>8. If necessary data is fetched;</li> <li>9. (and) instruction is executed by processor/ALU;</li> <li>10. Address sent/transferred over address bus;</li> <li>11. Data/instruction transferred to processor on data bus;</li> <li>12. Result stored in accumulator;</li> </ol>	<p><b>MAX</b> <b>6</b></p>
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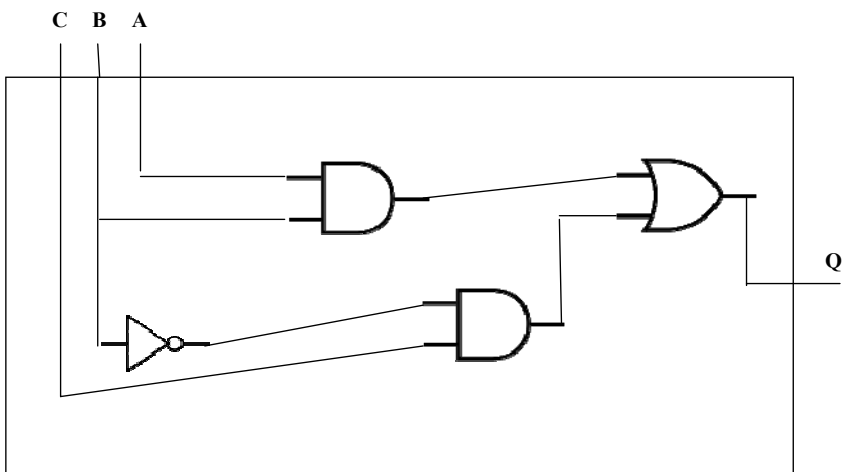
6	(a)	(i)	the <u>protocol</u> used // this is the hypertext transfer <u>protocol</u> ;	1
		(ii)	address of Aqa's World Wide Web server; <b>R</b> domain name	1
		(iii)	the path/location of the file/resource; <b>OR</b> <i>description of folder structure</i> ;	1

7	<p><i>World-Wide Web:</i></p> <p>A1. a system of interlinked hypertext documents;</p> <p>A2. accessed via the Internet;</p> <p>A3. using HTTP protocol (to retrieve webpages);</p> <p>A4. Web pages not restricted to intranet;</p> <p><i>Internet:</i></p> <p>B1. global network;</p> <p>B2. A network of interconnected computer networks / computers;</p> <p>B3. using a <u>globally</u> unique address space;</p> <p>B4. Packet-switched network;</p> <p>B5. using end-to-end communication protocol // Internet Protocol // TCP/IP;</p> <p>B6. public network;</p> <p><i>Intranet:</i></p> <p>C1. a <u>private</u> (computer) network;</p> <p>C2. available to a closed community // only within an organisation;</p> <p>C3. that uses Internet Protocols;</p> <p>C4. to share part of an organisation's information (with its members);</p>	
<b>Mark bands and description</b>		
5-6	<p><i>To achieve a mark in this band, a candidate must meet the subject criterion (SUB) and 4 of the 5 quality of language criteria (QLx).</i></p> <p>SUB Candidate has provided a clear explanation of at least 5 differences listed above between the <u>three</u> terms.</p> <p>QL1 Text is legible.</p> <p>QL2 There are few, if any, errors of spelling, punctuation and grammar. Meaning is clear.</p> <p>QL3 The candidate has selected and used a form and style of writing appropriate to the purpose and has expressed ideas clearly and fluently.</p> <p>QL4 Sentences and paragraphs follow on from one another clearly and coherently.</p> <p>QL5 Appropriate, specialist vocabulary has been used.</p>	
3-4	<p><i>To achieve a mark in this band, a candidate must meet the subject criterion (SUB) and 4 of the 5 quality of language criteria (QLx).</i></p> <p>SUB Candidate has provided a limited explanation of at least 3 differences between <u>at least two of the</u> terms.</p> <p>QL1 Text is legible.</p> <p>QL2 There may be occasional errors of spelling, punctuation and grammar. Meaning is clear.</p> <p>QL3 The candidate has, in the main, used a form and style of writing appropriate to the purpose, with occasional lapses. The candidate has expressed ideas clearly and reasonably fluently.</p> <p>QL4 The candidate has used well-linked sentences and paragraphs.</p> <p>QL5 Appropriate, specialist vocabulary has been used.</p>	
1-2	<p><i>To achieve a mark in this band, a candidate must meet the subject criterion (SUB). The quality of language should be typified by the QLx statements.</i></p> <p>SUB Candidate has provided a weak explanation which does not demonstrate a clear understanding of the differences between the three terms, or only one or two differences given.</p> <p>QL1 Most of the text is legible</p> <p>QL2 There may be some errors of spelling, punctuation and grammar but it should still be possible to understand most of the response.</p> <p>QL3 The candidate has used a form and style of writing which has many deficiencies. Ideas are not always clearly expressed.</p> <p>QL4 Sentences and paragraphs may not always be well-connected or bullet points may have been used.</p>	

	QL5 Specialist vocabulary has been used inappropriately or not at all.	
0	Candidate has not made reference to any of the points listed above	
<p><i>Note: even if English is perfect, candidates can only get marks for the points made at the top of the mark scheme for this question..</i></p> <p><b>If a candidate meets the subject criterion in a band but does not meet the quality of language criteria then drop mark by one band, providing that at least 3 of the quality fo language criteria are met in the lower band. If 3 criteria are not met then drop by two bands.</b></p> <p><i>Must mark quality of language and contents holistically, not separately</i></p>		<b>MAX 6</b>

8	(a)	<b>Typical Capacity</b>	<b>Storage Medium</b>	<b>5</b>
		10 Gigabytes – 2 Terabytes	Magnetic Hard disk //magnetic tape cartridge;	
		10 Gigabytes – 800 Gigabytes	Magnetic hard disk // magnetic tape cartridge;	
		128 Megabytes – 8 Gigabytes	Flash memory card;	
		2.8 Gigabytes – 4.7 Gigabytes	DVD-R;	
		600 Megabytes – 700 Megabytes	CD-ROM;	
	(b)	(i)	CD-ROM // DVD-R;	<b>1</b>
		(ii)	magnetic hard disk // magnetic tape cartridge <b>A</b> flash memory card <b>A</b> DVD-R;	<b>1</b>

9	(a)	data which relate to a <u>living</u> individual who can be <u>identified</u> from that data // data about a <u>living identifiable</u> person;	<b>1</b>
	(b)	<ol style="list-style-type: none"> <li>1. password-protect files/database; <b>R</b> password only</li> <li>2. force regular changes of passwords;</li> <li>3. force strong passwords; <i>or including an example</i></li> <li>4. firewall to guard against hackers;</li> <li>5. <u>run</u> anti-spyware software;</li> <li>6. backup <u>regularly</u>;</li> <li>7. keep backups securely stored away from computer system;</li> <li>8. ensure data can be restored from backups;</li> <li>9. only allow authorised software to be used on the system;</li> <li>10. staff training to make them data-aware;</li> <li>11. appropriate operational procedures;</li> <li>12. (set up work groups and) give access rights relevant to (groups’) needs;</li> <li>13. Do not allow unencrypted data to be stored (on portable media)//encrypt data;</li> <li>14. <u>run</u> anti-virus software</li> </ol> <p><b>R</b> Access rights on their own</p>	<b>3</b>

10	(a)	<div style="display: flex; justify-content: space-around;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr><th colspan="3">OR</th></tr> <tr><th>Input A</th><th>Input B</th><th>Output</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td><b>0</b></td></tr> <tr><td>0</td><td>1</td><td><b>1</b></td></tr> <tr><td>1</td><td>0</td><td><b>1</b></td></tr> <tr><td>1</td><td>1</td><td><b>1</b></td></tr> </tbody> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr><th colspan="3">AND</th></tr> <tr><th>Input A</th><th>Input B</th><th>Output</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td><b>0</b></td></tr> <tr><td>0</td><td>1</td><td><b>0</b></td></tr> <tr><td>1</td><td>0</td><td><b>0</b></td></tr> <tr><td>1</td><td>1</td><td><b>1</b></td></tr> </tbody> </table> </div> <p><i>1 mark per correct table</i></p>	OR			Input A	Input B	Output	0	0	<b>0</b>	0	1	<b>1</b>	1	0	<b>1</b>	1	1	<b>1</b>	AND			Input A	Input B	Output	0	0	<b>0</b>	0	1	<b>0</b>	1	0	<b>0</b>	1	1	<b>1</b>	2
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	(b)	<p>(i) <math>Q = A \cdot B + C \cdot \overline{B}</math></p> <p><i>1 mark for <math>A \cdot B</math> or for <math>C \cdot \overline{B}</math></i>  <i>2 marks for <math>A \cdot B + C \cdot \overline{B}</math></i>  <i>A AND instead of . A OR instead of +</i></p>	2																																				
	(ii)	<p><i>1 mark for each gate with correct inputs;;;</i>  <i>Allow two lines from B</i></p> 	4																																				
11	<ol style="list-style-type: none"> <li>1. reader sends radio frequency energy/wave;</li> <li>2. to the antenna of the RFID tag in the book;</li> <li>3. The RFID tag is energised by the reader/this energy;</li> <li>4. the transponder (in the tag) sends the data signal;</li> <li>5. the reader near the exit receives the data signal;</li> </ol>	<b>MAX</b> 2																																					

12	(a)	<ol style="list-style-type: none"> <li>1. a mechanical, moveable structure;</li> <li>2. can sense its surroundings/environment;</li> <li>3. can manipulate things</li> <li>4. // interact with things;</li> <li>5. makes dextrous coordinated movements;</li> <li>6. has some degree of intelligence or ability to make choices based on environment;</li> <li>7. is programmable;</li> <li>8. a mechanism guided by automatic controls;</li> <li>9. a machine that resembles a human being and performs various complex tasks of a human being;</li> <li>10. a device that automatically performs complicated/repetitive tasks;</li> <li>11. a mechanism which moves and reacts to its environment;</li> <li>12. a robot is a mechanical or virtual Agent;</li> <li>13. artificially created;</li> </ol>	<b>MAX 2</b>
	(b)	<p><i>Application: (or any other reasonable for 1 mark)</i>                      manufacture / welding / bomb disposal;  <i>Why: (max 1 mark)</i></p> <ol style="list-style-type: none"> <li>1. repetitive tasks;</li> <li>2. tasks that require precision;</li> <li>3. tasks that are dangerous for humans;</li> <li>4. produces consistent quality</li> <li>5. continuous operation;</li> </ol>	<b>2</b>