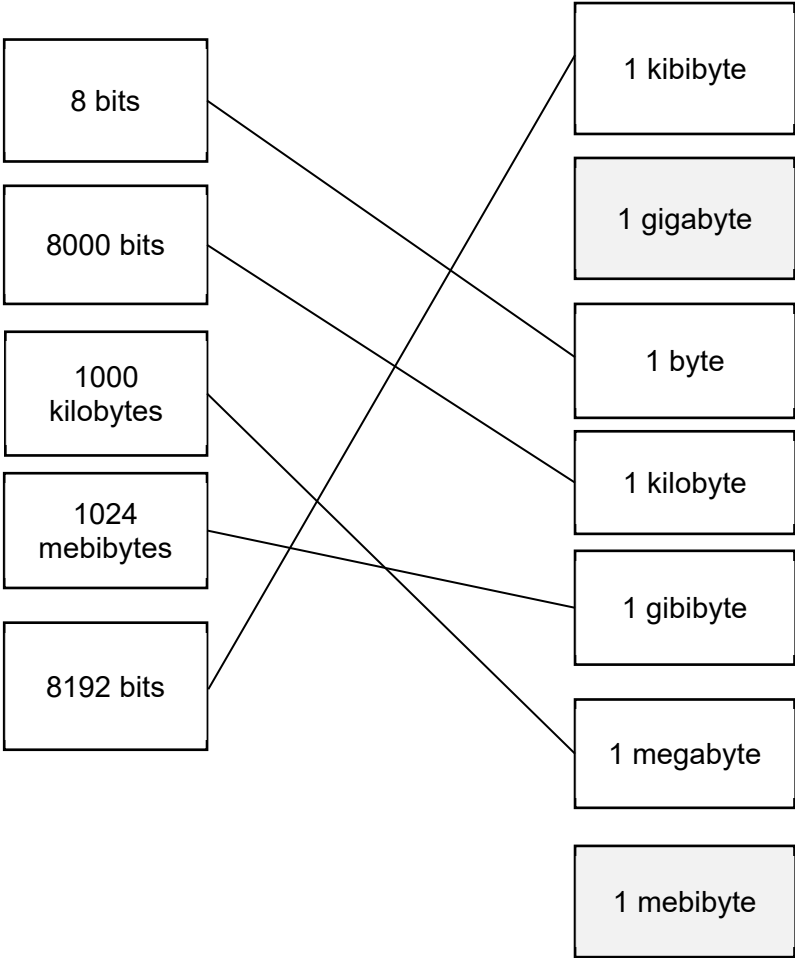
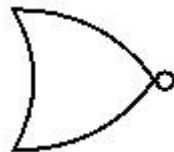
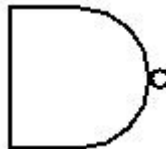


Question	Answer	Marks
1(a)	<p>1 mark for each correct line</p> 	5
1(b)(i)	<p>1 mark for answer 1 mark for working</p> <p>e.g.</p> $\begin{array}{r} 1010\ 1010 \\ 0011\ 0111 \\ \hline 1110\ 0001 \\ \hline 1\ 1\ 1\ 1\ 1\ 1 \end{array}$	2
1(b)(ii)	<p>The result is a larger number than can be stored in the given number of bits. // The result is greater than <u>255</u></p>	1
1(c)	240	1

Question	Answer	Marks
2(a)	1 mark per bullet point <ul style="list-style-type: none"> security is protecting data from loss / corruption integrity is ensuring the consistency / accuracy of the data 	2
2(b)(i)	1 mark per bullet point <ul style="list-style-type: none"> validation checks that data is reasonable / sensible example e.g. checking data is the right number / type of characters 	2
2(b)(ii)	1 mark per bullet point <ul style="list-style-type: none"> verification checks that data is the same as the original by example e.g. double entry 	2
2(c)	1 mark per similarity to max 2 <ul style="list-style-type: none"> Both are pieces of malicious software Both are downloaded / installed/run without the user's knowledge Both can pretend to be / are embedded in other legitimate software when downloaded // both try to avoid the firewall Both run in the background 1 mark for difference <ul style="list-style-type: none"> Virus can damage computer data; spyware only records / accesses data Virus does not send data out of the computer; spyware sends recorded data to third party Virus replicates itself; spyware does not replicate itself 	3

Question	Answer	Marks
3(a)	1 mark per bullet point <ul style="list-style-type: none"> A AND B XOR C OR NOT B ((A AND B) XOR C) OR NOT B	3

Question	Answer	Marks																																													
3(b)	<p>1 mark for each set of 4 rows (shaded)</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>0</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		0	0	1	1		1	1	0	0		1	1	0	1		1	1	1	0		1	1	1	1		0	2
A	B	C	Working space	X																																											
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3(c)	<p>1 mark for gate, 1 mark for matching symbol, 1 mark for matching truth table</p> <p>NOR</p> <div></div> <table><tr><th>A</th><th>B</th><th>OUTPUT</th></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table> <p>NAND</p> <div></div> <table><tr><th>A</th><th>B</th><th>OUTPUT</th></tr><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></table>	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	3															
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Question	Answer	Marks
4(a)	1 mark per bullet point to max 3 e.g. <ul style="list-style-type: none"> • He has ethical guidelines to follow • ... so clients/other staff know the standards being applied • ... so he does not have to decide what is ethical it's written down • Clients / staff know he is reputable • ... recognition of his skills / knowledge • ... there may be a test / requirements for entry • They provide help and support • ... for example if he needs legal advice • They run training courses • ... to keep his skills up-to-date 	3
4(b)(i)	1 mark per bullet point to max 2 e.g. <ul style="list-style-type: none"> • He can tell the manager he has not used it • ... and how he will get up-to-date • He can perform his own research on how to use it • He can explain to the manager that he needs additional training • He can(ask the manager to book on a training course • He can ask for a mentor / to shadow someone • He can practice at home before starting 	2
4(b)(ii)	1 mark for each correct tool e.g. <ul style="list-style-type: none"> • Colour coding // pretty printing • Auto-complete • Auto-correct • Context sensitive prompts • Expand and collapse code blocks 	3
4(c)	1 mark per bullet point to max 2 e.g. <ul style="list-style-type: none"> • He didn't act in best interest of product • ... because the product might fail because he didn't report the error • He didn't act in best interest of client • ... because if the product does not work then they have been let down because he didn't report the error • He didn't act in the best interest of the profession • ... he is letting his profession down because he didn't report the error • He didn't act in best interest of the company • ... not correcting the error early could lead to later problems 	2

Question	Answer	Marks
4(d)	<p>1 mark for each correctly completed term</p> <p>Compilers are usually used when a high-level language program is complete. They translate all the code at the same time and then run the program. They produce executable/.exe/object code files that can be run without the source code.</p> <p>Interpreters translate one line of a high-level language program at a time, and then run that line of code. They are most useful while developing the programs because errors can be corrected and then the program continues from that line.</p> <p>Assemblers are used to translate assembly code into binary/machine code.</p>	4

Question	Answer	Marks																				
5(a)	<p>1 mark for 2 or 3 correct ticks, 2 marks for 4 correct ticks</p> <table><tr><th>Table</th><th>Field name</th><th>Primary Key (PK)</th><th>Foreign Key (FK)</th></tr><tr><td>MANAGER</td><td>ManagerID</td><td>✓</td><td></td></tr><tr><td>SHOP</td><td>ManagerID</td><td></td><td>✓</td></tr><tr><td>CAR</td><td>RegistrationNumber</td><td>✓</td><td></td></tr><tr><td>CAR</td><td>ShopID</td><td></td><td>✓</td></tr></table>	Table	Field name	Primary Key (PK)	Foreign Key (FK)	MANAGER	ManagerID	✓		SHOP	ManagerID		✓	CAR	RegistrationNumber	✓		CAR	ShopID		✓	2
Table	Field name	Primary Key (PK)	Foreign Key (FK)																			
MANAGER	ManagerID	✓																				
SHOP	ManagerID		✓																			
CAR	RegistrationNumber	✓																				
CAR	ShopID		✓																			
5(b)	<p>1 mark per bullet point</p> <ul style="list-style-type: none">• Access rights give managers / himself access to different elements• ... by having different accounts / logins• ... which have different access rights e.g. read only // no access / read / write• Specific <u>views</u> can be assigned to himself and to the managers• ... e.g. managers can only see the data for their own shop(s)	3																				
5(c)(i)	<p>1 mark per correctly completed statement</p> <pre>SELECT COUNT(RegistrationNumber) FROM CAR GROUP BY ShopID</pre>	3																				
5(c)(ii)	<p>1 mark for each correct statement</p> <pre>INSERT INTO CAR VALUES ("123AA", "Tiger", "Lioness", 10500, "12BSTREET")</pre>	2																				

Question	Answer	Marks															
6(a)	<p>1 mark for identification of line and description of error 1 mark for the correct statement</p> <table> <tr> <th>Line number</th><th>Description of the error</th><th>Correct statement</th></tr> <tr> <td>2</td><td>Program Counter should be incremented, not decremented</td><td>$PC \leftarrow [PC] + 1$</td></tr> <tr> <td>3</td><td>It should be the contents of the address in the MAR</td><td>$MDR \leftarrow [[MAR]]$</td></tr> </table>	Line number	Description of the error	Correct statement	2	Program Counter should be incremented, not decremented	$PC \leftarrow [PC] + 1$	3	It should be the contents of the address in the MAR	$MDR \leftarrow [[MAR]]$	4						
Line number	Description of the error	Correct statement															
2	Program Counter should be incremented, not decremented	$PC \leftarrow [PC] + 1$															
3	It should be the contents of the address in the MAR	$MDR \leftarrow [[MAR]]$															
6(b)	<p>1 mark for each correct row</p> <table> <tr> <th>Current contents of the ACC</th><th>Instruction</th><th>New contents of the ACC</th></tr> <tr> <td>11111111</td><td>OR 101</td><td>11111111</td></tr> <tr> <td>00000000</td><td>XOR #15</td><td>00001111</td></tr> <tr> <td>10101010</td><td>LSR #2</td><td>00101010</td></tr> <tr> <td>01010101</td><td>AND 104</td><td>00000000</td></tr> </table>	Current contents of the ACC	Instruction	New contents of the ACC	11111111	OR 101	11111111	00000000	XOR #15	00001111	10101010	LSR #2	00101010	01010101	AND 104	00000000	4
Current contents of the ACC	Instruction	New contents of the ACC															
11111111	OR 101	11111111															
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01010101	AND 104	00000000															

Question	Answer	Marks
7(a)(i)	<p>1 mark per bullet point</p> <ul style="list-style-type: none"> Smaller time gaps between the samples Makes the digital sound wave more accurate Smaller quantisation errors 	2
7(a)(ii)	<p>1 mark per bullet point</p> <ul style="list-style-type: none"> More samples/data are taken/recorded ... so more bits are stored altogether 	2
7(b)(i)	<p>1 mark per bullet point</p> <ul style="list-style-type: none"> Reduces the file size Faster to transmit/download Original file is too large for email storage/attachment 	2
7(b)(ii)	<p>1 mark per bullet point to max 2 e.g.</p> <ul style="list-style-type: none"> Reduce amplitude to only the range used ... limited amplitudes mean fewer bits per sample Run-length-encoding ... Where consecutive sounds are the same record the binary value of the sound and number of times it repeats Record the changes instead of the actual sounds 	2

Question	Answer	Marks
8(a)	1 mark per bullet point <ul style="list-style-type: none"> • LAN • Small geographical area • No leasing external infrastructure / transmission media // does not use internet to transmit within the building 	3
8(b)	1 mark per item <ul style="list-style-type: none"> • router • switch • hub 	2
8(c)	1 mark per bullet point to max 4 <ul style="list-style-type: none"> • Provide interface to wireless network • ... as an antenna • Receives analogue radio waves • ... convert them to digital / binary • Checks incoming transmissions for correct MAC / IP address • ... ignore transmissions not intended for it • Encrypts / encodes the data • Decrypts / decodes the data • Takes digital/binary input and converts to analogue waves • ... sends the radio waves via the antenna 	4