

Please write clearly in block capitals.	
Centre number	Candidate number
Surname	
Forename(s)	
Candidate signature	

GCSE COMPUTER SCIENCE

Paper 2 Written assessment

Thursday 17 May 2018

Afternoon

Time allowed: 1 hour 30 minutes

Materials

There are no additional materials required for this paper.

Instructions

- Use black ink or black ball-point pen. Use pencil only for drawing.
- Answer all questions.
- You must answer the questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- You must not use a calculator.

Information

• The total number of marks available for this paper is 80.

For Exam	iner's Use
Question	Mark
1–4	
5–6	
7	
8–9	
10	
11	
12	
13	
14	
15	
TOTAL	

Advice

For the multiple-choice questions,	completely	fill in the	lozenge along	gside the app	ropriate answe
CORRECT METHOD WRONG METHO			7		

If you want to change your answer you must cross out your original answer as shown. If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.



	Answer all questions.	Do not write outside the box
0 1	A bit pattern is shown in Figure 1 . Figure 1	
	10011100	
0 1.1	Convert the bit pattern shown in Figure 1 into decimal. [1 mark]	
0 1.2	Convert the bit pattern shown in Figure 1 into hexadecimal. You should show your working. [2 marks]	
	Answer:	
0 2	Add together the following three binary numbers and give your answer in binary:	
	01110101 00100100 +00010001	



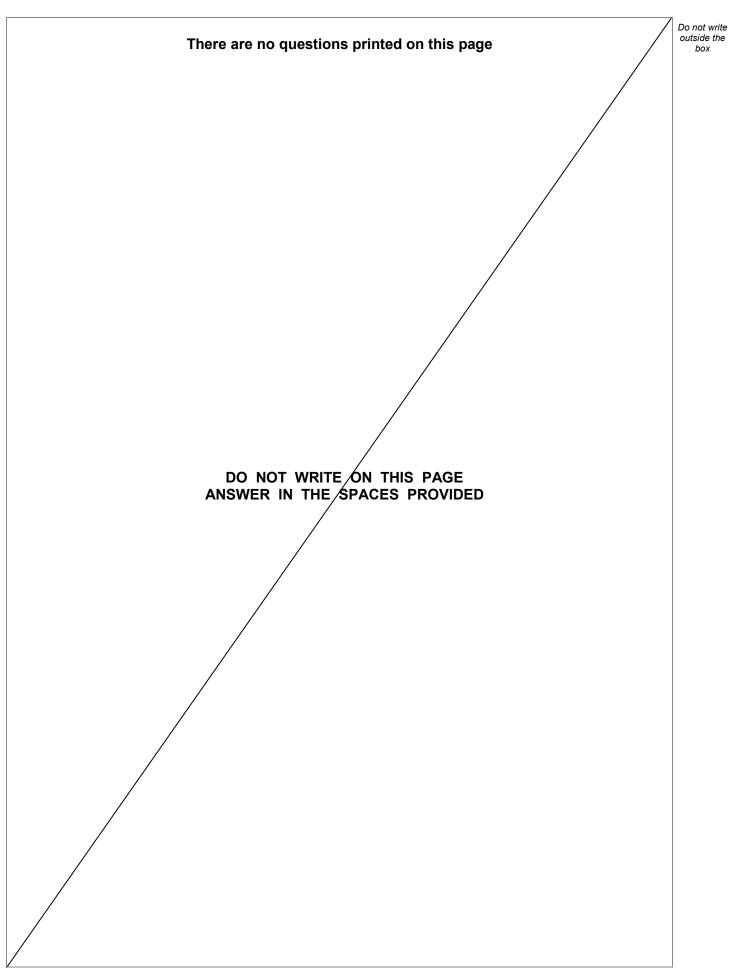
Do not write

outside the box Put the following capacities into size order (where 1 is the smallest and 4 is the 0 3 largest). [3 marks] Capacity Order (1-4) 0.5 Terabytes 3500 Kilobytes 2.5 Gigabytes 6250 Megabytes Figure 2 shows an 8 x 8 black and white bitmap image. The image has been 0 4 represented as a bit pattern with each bit representing a pixel. Row 3 has been represented as 01011010. Figure 2 Row 1 Row 2 Row 3 Row 4 Row 5 Row 6 Row 7 Row 8 What is the binary representation of Row 4 in Figure 2? 0 4 [1 mark] Row 4: The image in Figure 2 is going to be changed so that each pixel can be any one of 2 4 16 different colours. What is the minimum number of bits that would be needed to represent the entire 16-colour image? You should show your working. [2 marks] 11



0 5	ROM is a type of memory used in computers. Shade two lozenges to show which statements are true about ROM.	[2 marks]	Do not write outside the box
	A Desktop computers usually store application software in ROM	0	
	B Desktop computers typically have more ROM than RAM	0	
	C ROM is commonly used to store start-up instructions	0	
	D ROM is non-volatile	0	
	E ROM is used to increase the quality of graphics on a computer	0	
0 6	Explain how a magnetic hard disk drive (HDD) operates.	[4 marks]	
			6







Do not write outside the box

0 7 Figure 3 shows a logic circuit. Figure 3 Α G_1 G_3 F B G_2 E С State the type of logic gate labelled G_1 in Figure 3. 0 7 [1 mark] **G**₁: State the type of logic gate labelled G_2 in Figure 3. 0 7 [1 mark] G_2 : State what a NOT gate does. 7 3 [1 mark]



0 7.4

Complete the following truth table for the logic circuit shown in ${\bf Figure~3}$ by filling in the grey shaded cells.

Do not write outside the box

[3 marks]

Α	В	С	D	E	F
0	0	0	0	0	0
0	0	1	0	1	1
0	1	0	0	0	0
0	1	1	0	1	1
1	0	0			
1	0	1	0	1	1
1	1	0	1		
1	1	1			

6

Turn over for the next question



0 8.1	State three components of the CPU and describe their purpose.	outs	not write tside the box
	Component 1:		
	Description:		
	Component 2:		
	Description:		
	Component 3:		
	Description:		
0 8 . 2	Figure 4 shows a simplified diagram of the Fetch-Execute cycle.		
0 0 . 2	Fill in the name of the missing stage in Figure 4 below.		
	This is the name of the missing stage in Figure 4 sciew.	[1 mark]	
	Figure 4		
	←		
		†	
	Fetch Execute		



	9	
0 9	Computer users will often store their data 'in the cloud'. State three reasons why you might want to use cloud storage rather than local storage. [3 marks]	Do not write outside the box
		10
	Turn over for the next question	



10.1	Describe one difference between system software and application software.	[2 marks]	Do not write outside the box
	Describe two different functions performed by an operating system.		
1 0 . 2		[4 marks]	
	Function 2:		



1 0.3	A student was asked to describe what software and hardware are. They gave the following answer:	outside to
	'New hardware can be installed by downloading it from the web or an installation disk whereas software requires someone to physically attach it to the computer.'	
	Explain two mistakes the student has made.	
	[2 marks]	
		8

Turn over for the next question



11.1	Explain two differences between a LAN and a WAN. [4 marks]	Do not write outside the box
	Difference 1:	
	Difference 2:	
1 1.2	HTTP and HTTPS are two application layer protocols.	
	Explain why HTTPS is often used rather than HTTP. [1 mark]	
1 1.3	The application layer and the network (internet) layer are two of the layers within the TCP/IP stack.	
	What are the names of the other two TCP/IP stack layers? [2 marks]	
	2	

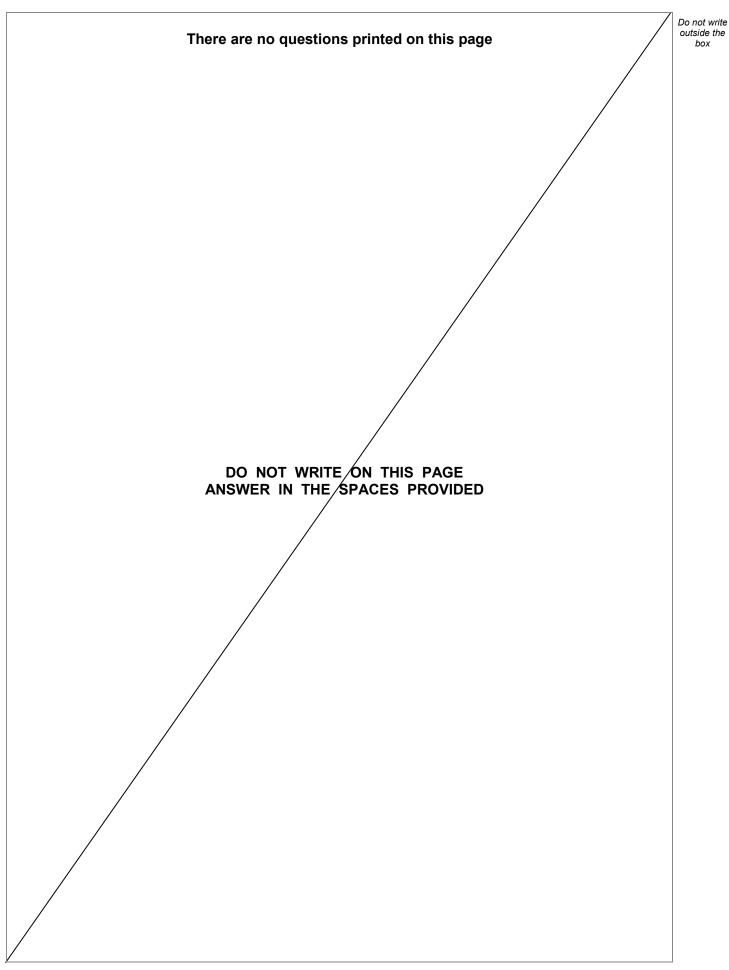


1 1.4	What is the purpose of the network (internet) layer within the TCP/IP stack?	[2 marks]	Do not write outside the box
1 1.5	Explain how MAC address filtering works.	[2 marks]	
			11
	Turn over for the next question		



1 2	Social engineering is where someone is tricked or manipulated into providing secure information or access to a secure system. Describe each of the following social engineering techniques.	Do not write outside the box
	[3 marks]	
	Blagging:	
	Phishing:	
	Shouldering (or shoulder surfing):	
		3







1 3

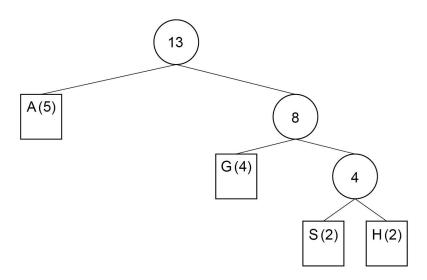
The Huffman tree shown in **Figure 6** was created to encode the string shown in **Figure 5**. The frequency of each character is shown in brackets. For example, the letter $\mathbb A$ appears five times within the string shown in **Figure 5**.

Do not write outside the box

Figure 5

AAGHHGGSAAASG

Figure 6



1 3 . 1 Complete the code table below for characters G, S and H for the Huffman tree shown in **Figure 6**. The code for character A has already been completed.

[3 marks]

Character	Binary code
А	0
G	
S	
Н	



1 3.2	The string shown in Figure 5 could also be encoded using ASCII. ASCII uses 7 bits to represent each character.	Do not wr outside th box
	How many bits are saved by using Huffman coding rather than ASCII to represent the string shown in Figure 5 ?	
	You must show your working. [4 marks]	
	Answer:	7

Turn over for the next question



1 4	Many organisations provide free public access to a wireless network.	Do not write outside the box
	Explain three ethical, legal or data privacy issues that an organisation should be aware of when allowing this access.	
	[6 marks]	
		6



1 5	AQATravel is a tour operator that sells holidays to places all around the world. They hold all of their customer and business data electronically. Following recent news articles about the effects of malware attacks on businesses, the management of AQATravel have been investigating how they could protect themselves against malware attacks.	Do not write outside the box
	Discuss four methods that AQATravel could use to prevent infections from malware and/or to minimise the damage that could be caused by malware. [12 marks]	





	Do not write
	outside the box
	DOX
-	
	12

END OF QUESTIONS

Copyright information

For confidentiality purposes, from the November 2015 examination series, acknowledgements of third party copyright material will be published in a separate booklet rather than including them on the examination paper or support materials. This booklet is published after each examination series and is available for free download from www.aqa.org.uk after the live examination series.

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders may have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements. If you have any queries please contact the Copyright Team, AQA, Stag Hill House, Guildford, GU2 7XJ.

Copyright © 2018 AQA and its licensors. All rights reserved.



IB/G/Jun18/8520/2