

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

# GCSE COMPUTER SCIENCE

Paper 2 Written Assessment

Thursday 16 May 2019

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 Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–16	
TOTAL	

# **Advice**

For the multiple-choice questions, completely fill in the lozenge alongside the appropriate answer.

CORRECT METHOD lacktriangle WRONG METHODS lacktriangle lacktriangle

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 in the spaces provided.	
0 1.1	Convert the decimal number 197 into binary.	[1 mark]
0 1 . 2	Convert the hexadecimal number A4 into decimal.  Show your working.	[2 marks]
	Answer	
0 2.1	What is the largest decimal number that can be represented using 5 bits?	[1 mark]
0 2.2	How many bits are there in 3 MB?	
	Show your working.	[2 marks]
	Answer	



3	State <b>one</b> advantage of using Ur	nicode instead of using ASCII.	[1 mark
4	Which <b>two</b> of the following are co	omponents of a CPU?	
	Shade <b>two</b> lozenges.		[2 marks
	A Arithmetic logic unit	0	
	B Control unit	0	
	<b>C</b> Fan	0	
	<b>D</b> Hard disk drive	0	
	E Keyboard	0	
	F Power supply unit	0	
5		application software. State <b>two</b> othen application software. State two othen applications are two others are two others are two others are two others.	
	1		įz markė
	2		
	Turn over fo	r the next question	

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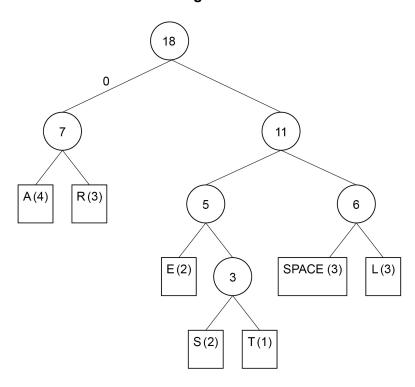


	4		
0 6	Select the <b>correct</b> statement about secondary storage.		Do not write outside the box
	Shade <b>one</b> lozenge.	[1 mark]	
	A Secondary storage is a type of ROM.	0	
	<b>B</b> Secondary storage is non-volatile.	0	
	C Secondary storage is temporary.	0	
	<b>D</b> Secondary storage loses its content when it is turned off.	0	
0 7	Describe how an optical disk is read.	[4 marks]	



0 8 The Huffman tree in Figure 1 was generated for the string ARE ALL STARS REAL

Figure 1



0 8 . 1 Part of the string ARE ALL STARS REAL was incorrectly encoded as in Figure 2 below.

Figure 2

1111000010101011

What string does this encoding represent?

[1 mark]

0 8. 2 What would be the correct binary encoding for the substring STAR?

Write the correct encoding below the letters in the table.

[2 marks]

S	Т	A	R



0 9	Explain <b>two</b> reasons why software companies usually do <b>not</b> make their so publicly available. Source code is the code they wrote to create the software code is the code they wrote to create the software code.	urce code re. [4 marks]
1 0	Define the term embedded system.	[2 marks]



1   1   .   1	Draw a simple diagram to show a star network topology containing four desktop	Do not writ outside the box
	computers. [2 marks]	
1 1 . 2	Draw a simple diagram to show a bus network topology containing four desktop	
	computers.  [2 marks]	
	computers.	



1 1.3	State <b>two</b> advantages of using a star topology instead of a bus topology.	[2 marks]
	1	
	2	
1 1.4	State <b>one</b> disadvantage of using a star topology instead of a bus topology.	[1 mark]
1 1.5	Discuss the benefits and risks of using a computer network.	[9 marks]



			outs	not write side the box
	-			
1 1 . 6	Define the term <b>network proto</b>	ocol.		
			[2 marks]	
1 1.7	Which <b>two</b> of the following are	email protocols?		
	Shade <b>two</b> lozenges.			
	Ç		[2 marks]	
	A FTP	0		
	<b>B</b> HTTP	0		
	C IMAP	0		
	<b>D</b> SMTP	0		
	E TCP	0		
	F UDP	0		
		<del></del>		



1 2 . 1 Explain why a firewall improves network security.		Do not write outside the box
	[2 marks]	
1 2 . 2 A company has decided to move its business online be sure that only authorised users can gain access to the up a CAPTCHA system to check that the user is not a	system. The company has set	
Explain <b>three</b> different electronic methods that could the identity.	nen be used to confirm user	
identity.	[6 marks]	



1 2 . 3	Penetration testing can be conducted as either black-box or white-box	testing.	Do no outsid
	Explain the difference between these two types of penetration testing.	[4 marks]	1
		[4 marko]	'
			-
			-
			-
			-
			-
			-
			-
			-
3	The four layers of the TCP/IP network model are shown below.		
	For each row in Figure 3, write the letter A, B, C or D that matches the	e description.	
	Each letter should only be used once.	[2 marks]	
	A Application layer B Transport layer C Internet layer	<u>[</u> =	
	D Link layer		
	Figure 3		
	Description	Letter	
	Addresses data for transmission		
	Sets up the communication between the two hosts		
	Where the network hardware is located		
	Where the user software, such as web browsers or email		

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programs, operates

1 4	A virus is a specific category of malware.	Do not write outside the box
	Describe <b>three</b> other different categories of malware.  [6 marks	s]
	Malware 1	_
		_
		_
	Malware 2	_
		_
		_
		_
	Malware 3	_
		_
		_
		_



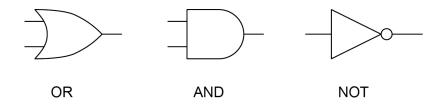
5 1

A burglar alarm sounds an alarm when it is armed (turned on) and the window or door is opened.

The truth table for this basic system is shown in **Figure 4**.

Figure 4

Armed (A) 0 = Off 1= On	Door (B) 0 = Closed 1 = Open	Window (C) 0 = Closed 1 = Open	Alarm (Q) 0 = Off 1 = On
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1



Draw the logic circuit that represents the truth table in Figure 4. You must use the correct symbols for logic gates. You may not need to use all the gates shown.

[3 marks]



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1 6

Specifications for two different devices are shown in Figure 5.

Discuss the advantages and disadvantages of **Device A** compared to **Device B**.

Your answer should explain the impact each advantage/disadvantage will have on the operation of the device.

You should assume that any aspects of the specifications **not** mentioned in **Figure 5** are the same for both devices.

[12 marks]

Figure 5



Device A	Device B
Quad (4) core 1.6 GHz CPU with 8 MB cache	Dual (2) core 3.9 GHz CPU with 2 MB cache
16 GB RAM	4 GB RAM
2 TB Hard Disk Drive (HDD)	250 GB Solid State Drive (SSD)



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# **END OF QUESTIONS**

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