

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  WRONG METHODS    

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.

Do not write
outside the
box

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 _____



0 3State **one** advantage of using Unicode instead of using ASCII.**[1 mark]**

0 4Which **two** of the following are components of a CPU?Shade **two** lozenges.**[2 marks]****A** Arithmetic logic unit**B** Control unit**C** Fan**D** Hard disk drive**E** Keyboard**F** Power supply unit**0 5**A computer game is one type of application software. State **two** other types of application software. You must **not** use brand names in your answer.**[2 marks]**

1 _____

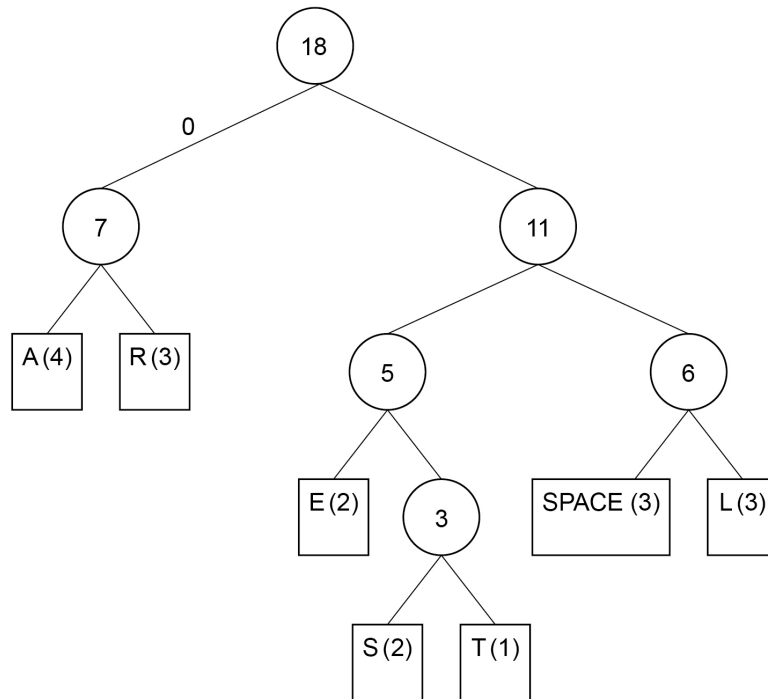
2 _____

Turn over for the next question

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	T	A	R

8

Turn over ►



0 9

Explain **two** reasons why software companies usually do **not** make their source code publicly available. Source code is the code they wrote to create the software.

[4 marks]

1 0

Define the term **embedded system**.

[2 marks]



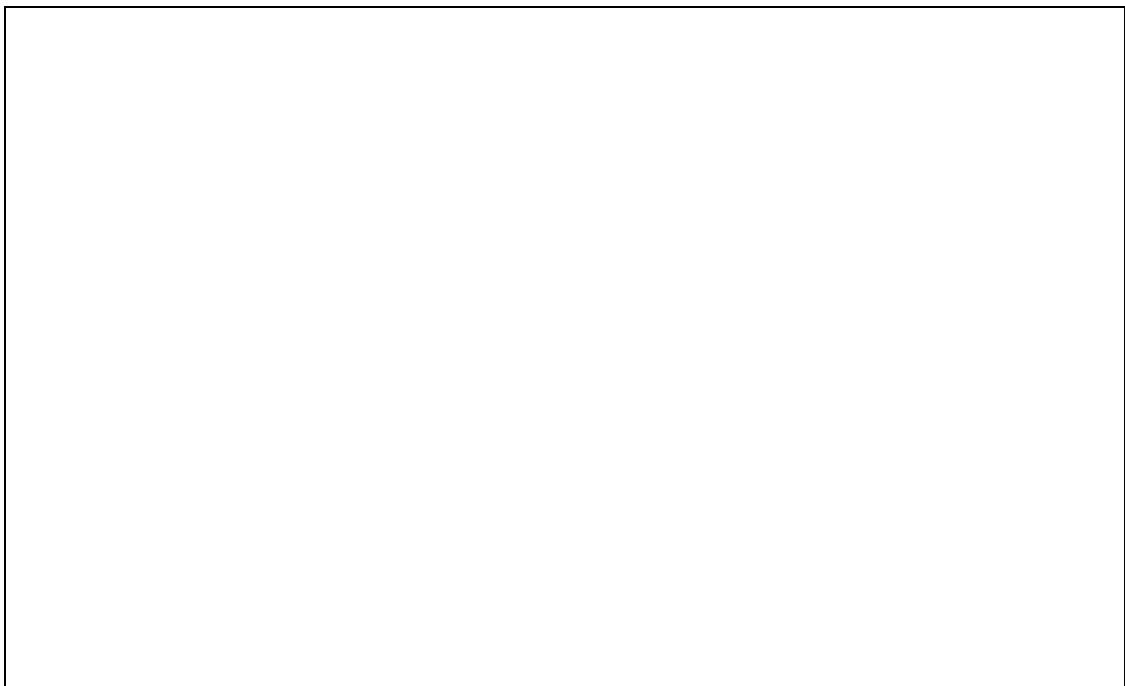
1 1 . 1

Draw a simple diagram to show a star network topology containing four desktop computers.

[2 marks]

1 1 . 2

Draw a simple diagram to show a bus network topology containing four desktop computers.

[2 marks]

Question 11 continues on the next page

10**Turn over ►**

1 1 . 3 State **two** advantages of using a star topology instead of a bus topology. **[2 marks]**

1 _____

2 _____

1 1 . 4 State **one** 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]**



1 1 . 6 Define the term **network protocol**.

[2 marks]

1 1 . 7 Which **two** of the following are email protocols?

Shade **two** lozenges.

[2 marks]

- | | |
|---------------|--------------------------|
| A FTP | <input type="checkbox"/> |
| B HTTP | <input type="checkbox"/> |
| C IMAP | <input type="checkbox"/> |
| D SMTP | <input type="checkbox"/> |
| E TCP | <input type="checkbox"/> |
| F UDP | <input type="checkbox"/> |



1 2 . 3

Penetration testing can be conducted as either black-box or white-box testing.

Explain the difference between these two types of penetration testing.

[4 marks]

1 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 description.

Each letter should only be used once.

[2 marks]

- A** Application layer
- B** Transport layer
- C** Internet layer
- 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 programs, operates	



1	4
---	---

A virus is a specific category of malware.

Describe **three** other different categories of malware.

[6 marks]

Malware 1 _____

Malware 2 _____

Malware 3 _____



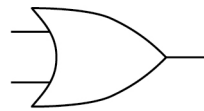
1 5

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

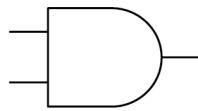
The truth table for this basic system is shown in **Figure 4**.

Figure 4

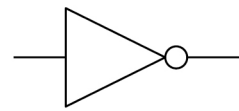
Armed (A) 0 = Off 1 = On	Door (B) 0 = Closed 1 = Open	Window (C) 0 = Closed 1 = Open	Alarm (Q) 0 = Off 1 = On
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1



OR



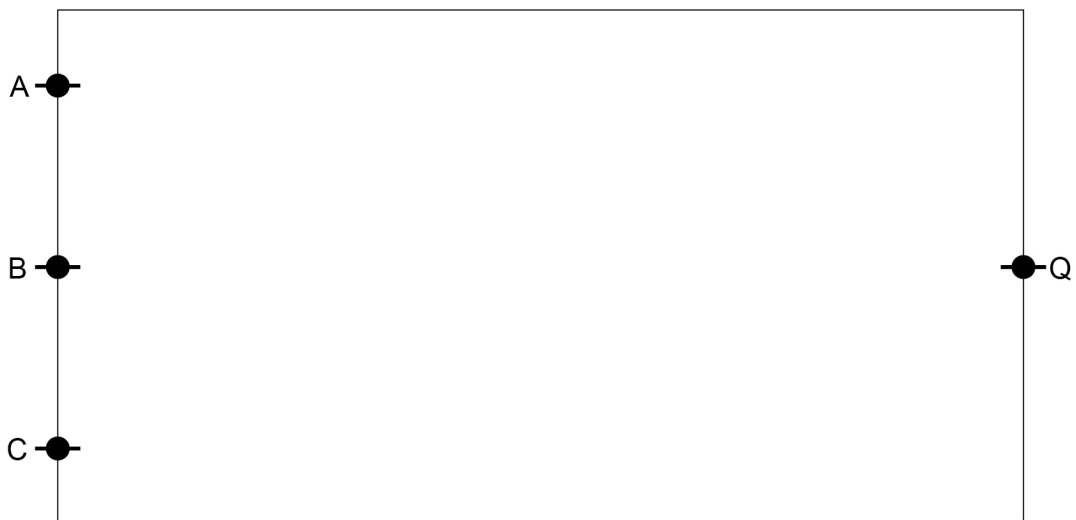
AND



NOT

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]



9

Turn over ►



