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Surname \_\_\_\_\_

Other Names \_\_\_\_\_

Centre Number \_\_\_\_\_

Candidate Number \_\_\_\_\_

Candidate Signature \_\_\_\_\_

**GCSE**

**COMPUTER SCIENCE**

**Paper 2 Written Assessment**

**8520/2**

**Thursday 16 May 2019      Afternoon**

**Time allowed: 1 hour 30 minutes**



**There are no additional materials required for this paper.**

**At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.**

**[Turn over]**



J U N 1 9 8 5 2 0 2 0 1

## 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.

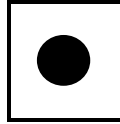
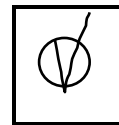
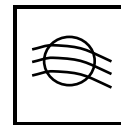
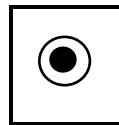
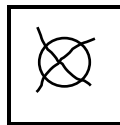
## INFORMATION

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

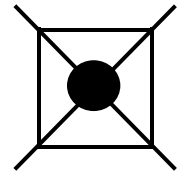


**ADVICE**

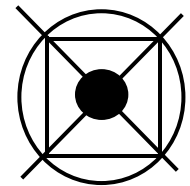
For the multiple-choice questions, completely fill in the lozenge alongside the appropriate answer.

**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.

**DO NOT TURN OVER UNTIL TOLD TO DO SO**

Answer ALL questions in the spaces provided.

**0 1 . 1** Convert the decimal number 197 into binary.  
[1 mark]

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**0 1 . 2** Convert the hexadecimal number A4 into decimal.

Show your working. [2 marks]

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Answer \_\_\_\_\_





**0 3**

**State ONE advantage of using Unicode instead of using ASCII. [1 mark]**

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**0 4**

**Which 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
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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

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2

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11

[Turn over]



06

Select the **CORRECT** statement about secondary storage.

Shade **ONE** lozenge. [1 mark]

**A** Secondary storage is a type of ROM.

**B** Secondary storage is non-volatile.

**C** Secondary storage is temporary.

**D** Secondary storage loses its content when it is turned off.

07

Describe how an optical disk is read.  
[4 marks]

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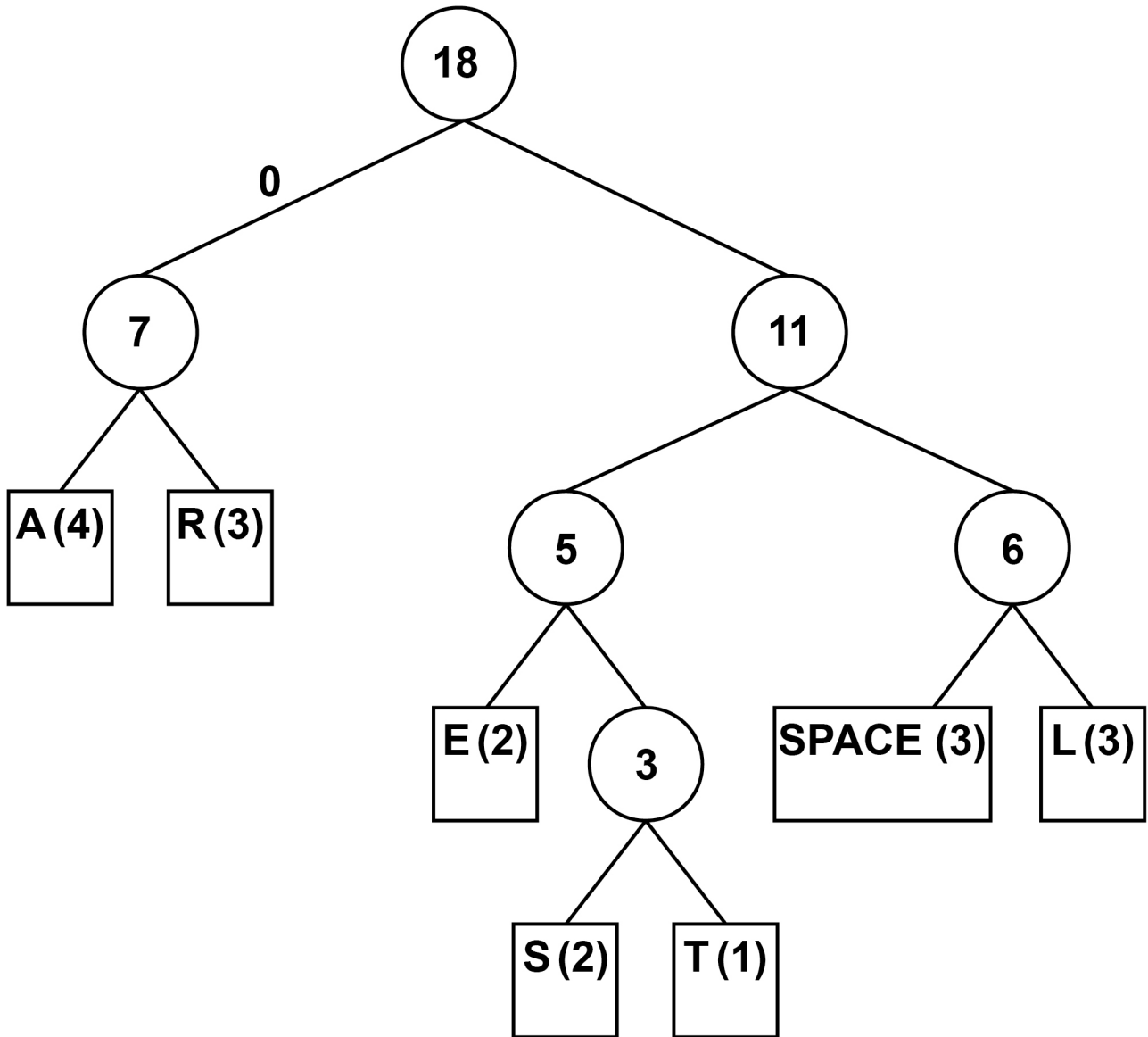




08

The Huffman tree in **FIGURE 1** was generated for the string ARE ALL STARS REAL

**FIGURE 1**



- 08.1** 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]

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- 08.2** 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

[Turn over]

8
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1 0

**Define the term EMBEDDED SYSTEM.  
[2 marks]**

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**[Turn over]**



- 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]**

**[Turn over]**

<b>10</b>



**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 . 6** Define the term NETWORK PROTOCOL.  
[2 marks]

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**11.7** Which TWO of the following are email protocols?

**Shade TWO lozenges. [2 marks]**

**A FTP**

**B HTTP**

**C IMAP**

**D SMTP**

**E TCP**

**F UDP**

**[Turn over]**

**16**



**1 2 . 1** Explain why a firewall improves network security. [2 marks]

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[Turn over]





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	

[Turn over]

14







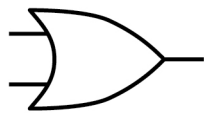
**1 5**

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

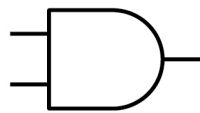
The truth table for this basic system is shown in FIGURE 4.

**FIGURE 4**

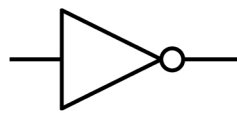
Armed (A) 0 = Off 1 = On	Door (B) 0 = Closed 1 = Open	Window (C) 0 = Closed 1 = Open	Alarm (Q) 0 = Off 1 = On
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1



**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]



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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Pages	Mark
4–7	
8–11	
12–15	
16–21	
22–27	
28–31	
32–37	
<b>TOTAL</b>	

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