Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

4124551037

COMPUTER SCIENCE **0478/13**

Paper 1 Theory **May/June 2020**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- Calculators must **not** be used in this paper.

INFORMATION

- The total mark for this paper is 75.
- The number of marks for each question or part question is shown in brackets [ ].
- No marks will be awarded for using brand names of software packages or hardware.

This document has **12** pages. Blank pages are indicated.

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[Turn over

1 Pradeep is reading hexadecimal values for a project he is working on.

(a) The first three hexadecimal values he reads are **15**, **102** and **A9**.

Give the **denary** values for the three hexadecimal values.

15 .....

102 .....

A9 .....
[3]

Working space

.....

.....

.....

.....

(b) Pradeep has two 8-bit binary values that he needs to convert to hexadecimal values for his project.

Give the **hexadecimal** values for the two 8-bit binary values.

01010000 .....

00111101 .....
[4]

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2 (a) **Six** hardware devices are shown.

Tick (✓) to show if each hardware device is an **Input**, **Output** or **Storage** device.

Hardware device	**Input (✓)**	**Output (✓)**	**Storage (✓)**
Solid state drive (SSD)			
Sensor			
Headphones			
Microphone			
USB flash drive			
Actuator			

[6]

(b) Genevieve writes a paragraph about a barcode reader.

Using the list given, complete the paragraph. Not all terms in the list need to be used.

- actuators
- binary
- black
- input
- microprocessors
- output
- sensors
- storage
- white

A barcode reader is an ..... device. It shines a light at the barcode and the light is reflected back. The ..... bars in the barcode reflect less light than the ..... bars.

..... are used to capture the amount of reflected light and the different reflections are converted to ..... values.

[5]

3 Thomas has an online business that sells homemade furniture. He has a web server that hosts his website for his business.

(a) Describe the role of a web browser in requesting and displaying the web pages for the website.

.....

.....

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.....

.....

..... [3]

(b) Thomas is worried about a denial of service (DoS) attack on his web server.

Describe what happens in a denial of service attack.

.....

.....

.....

.....

.....

..... [3]

4 The table shows **four** definitions.

Complete the table giving the missing **Term** for each definition.

Term	Definition
	A data transmission method that sends data one bit at a time, down a single wire
	An address given to a device on a network. The address is assigned by the network
	The software used to render HTML and display a web page
	An address given to a device at the manufacturing stage that can be used to identify the device on a network

[4]

5 **(a)** A clothing shop uses a barcode reader at the checkout.

The checkout is linked to a stock control system. The system monitors stock levels and automatically keeps them above a minimum level.

Explain how the stock control system automatically keeps the stock levels above a minimum level.

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.....

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..... [4]

(b) The software for the stock control system is stored on a central computer. The computer uses random access memory (RAM), read only memory (ROM) and a hard disk drive (HDD).

The computer is a Von Neumann model computer system with a central processing unit (CPU).

(i) State the purpose of the RAM, ROM and HDD in the central computer.

RAM .....

.....

ROM .....

.....

HDD .....

.....
[3]

(ii) Identify **four** components that are part of the CPU.

Component 1 .....

Component 2 .....

Component 3 .....

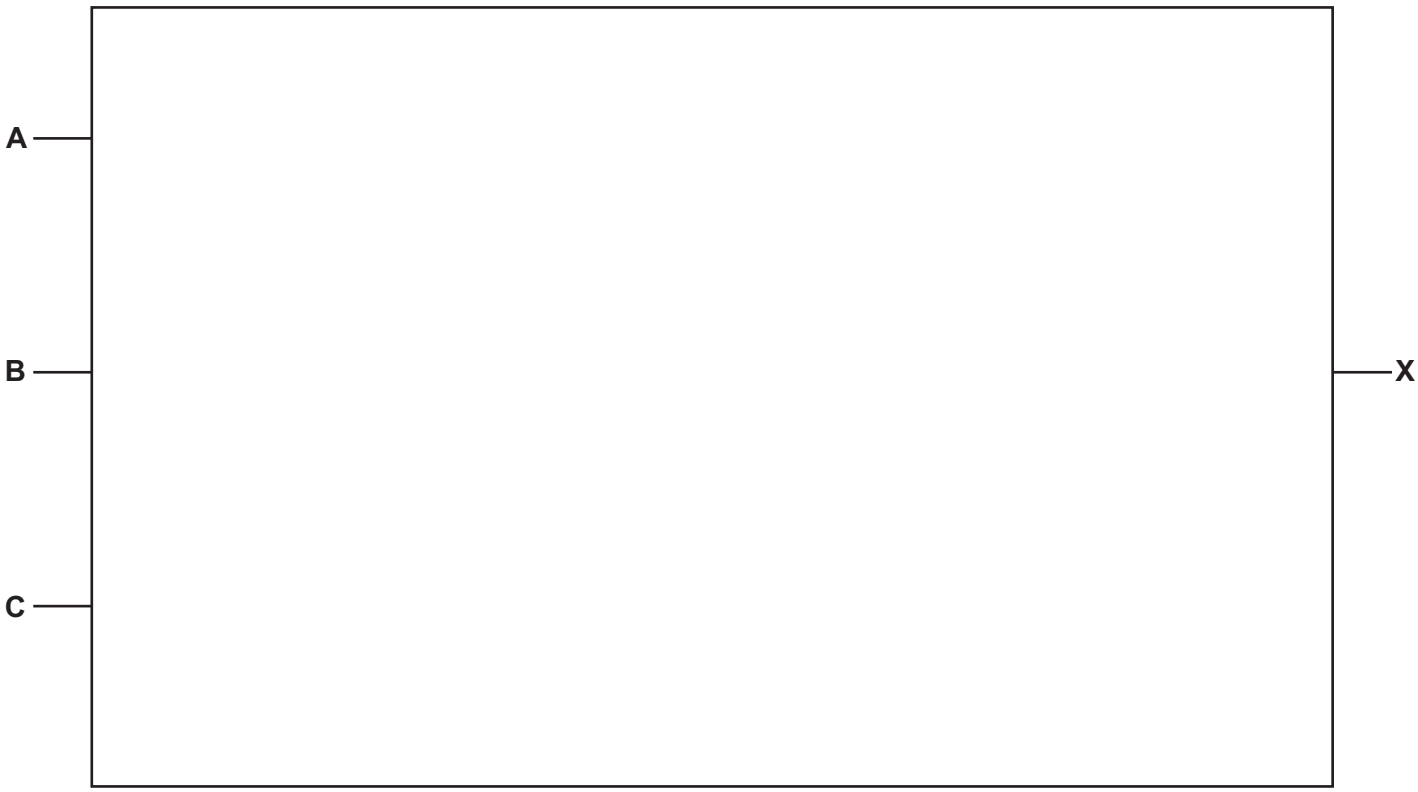
Component 4 .....
[4]

6 Consider the given logic statement:

X = (((**A** XOR **B**) AND **C**) OR NOT **C**)

(a) Draw a logic circuit to match the given logic statement.

All logic gates must have a maximum of **two** inputs. Do **not** attempt to simplify the logic statement.



[4]

(b) Complete the truth table for the given logic statement.

A	**B**	**C**	Working space	**X**
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[4]

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7 Edie uses a firewall to help prevent her children from accessing websites that she does not want them to see.

(a) Describe how the firewall helps prevent her children from accessing these websites.

.....

.....

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..... [4]

(b) Edie is concerned that her children may download a virus when accessing websites.

State what is meant by a **virus** and explain what could happen if a virus was downloaded.

.....

.....

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.....

.....

..... [3]

(c) Edie explains to her children how to identify if a website is secure.

(i) Give **two** ways that her children can identify if a website is secure.

1 .....

2 .....
[2]

(ii) Describe how a browser checks that a website is secure.

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..... [4]

8 **Six** statements are given about printers.

Tick (✓) to show whether the statement applies to a **3D** printer, an **Inkjet** printer or a **Laser** printer.

Some statements apply to more than one printer.

Statement	**3D (✓)**	**Inkjet (✓)**	**Laser (✓)**
Uses a moving print head			
Uses liquid ink			
Produces output using materials such as plastic and resin			
Uses piezoelectric or thermal technology			
Uses a rotating drum to transfer the image to the paper			
Uses layer upon layer of material to create the output			

[6]

9 Four 7-bit binary values are being transmitted from one computer to another. An odd parity check is being used to check for errors in the binary values.

Write the correct **Parity bit** for each **7-bit binary value** to make sure it meets **odd** parity.

Parity bit	**7-bit binary value**
.....	0000011
.....	1000000
.....	0111111
.....	1010101

[4]

10 Clive has a laptop computer that he uses for his business. He enters a username and password to log in to his laptop.

Clive is worried about spyware being used to find out his username and password.

(a) Describe how spyware could be used to find out Clive's username and password.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) The threat of spyware makes Clive concerned about typing a password to log in to his laptop.

Give an example of how Clive could log in securely without typing a password.

..... [1]

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