Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

2772106825

COMPUTER SCIENCE **0478/11**

Paper 1 Theory **May/June 2018**

1 hour 45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

No calculators allowed.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of this page.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

No marks will be awarded for using brand names of software packages or hardware.

Any businesses described in this paper are entirely fictitious.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

The maximum number of marks is 75.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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CAMBRIDGE International Examinations

[Turn over

1 Jane answers an examination question about computers and data correctly.
Six different words or numbers have been removed from her answer.

Complete the sentences in Jane's answer, using the list given. Not all items in the list need to be used.

- 2
- 10
- 16
- analogue
- binary
- denary
- digital
- hexadecimal

As humans, we process …… data, but a computer cannot

process this type of data. For a computer to be able to process data it needs to be

converted to …… data.

As humans, we mostly use a …… number system;

this is a base …… number system.

Computers use a …… number system;

this is a base …… number system.

[6]

2 Dheeraj identifies **three** hexadecimal numbers.

Write the **denary** number for each of the three hexadecimal numbers:

2A .....

101 .....

21E .....

[3]

Working Space

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3 The three binary numbers in the registers A, B and C have been transmitted from one computer to another.

	Parity bit							
Register A	1	0	0	1	1	0	0	0
Register B	0	1	1	0	0	1	1	1
Register C	1	0	0	1	1	0	0	1

One binary number has been transmitted incorrectly. This is identified through the use of a parity bit.

Identify which register contains the binary number that has been transmitted **incorrectly**. Explain the reason for your choice.

The binary number that has been transmitted incorrectly is in **Register** .....

Explanation .....

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[4]

4 Michele wants to email a file to Elsa. The file is too large so it must be compressed.

(a) Name **two** types of compression that Michele could use.

Compression type 1 .....

Compression type 2 .....
[2]

(b) The file Michele is sending contains the source code for a large computer program.

Identify which type of compression would be most suitable for Michele to use.

Explain your choice.

Compression type.....

Explanation.....

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[4]

5 **Six** components of the Von Neumann model for a computer system and **six** descriptions are given.

Draw a line to match each component to the most suitable description.

Component	Description
Immediate access store (IAS)	Holds data and instructions when they are loaded from main memory and are waiting to be processed.
Register	Holds data temporarily that is currently being used in a calculation.
Control unit (CU)	Holds data or instructions temporarily when they are being processed.
Accumulator (ACC)	Manages the flow of data and interaction between the components of the processor.
Arithmetic logic unit (ALU)	Carries out the calculations on data.
Bus	Pathway for transmitting data and instructions.

[5]

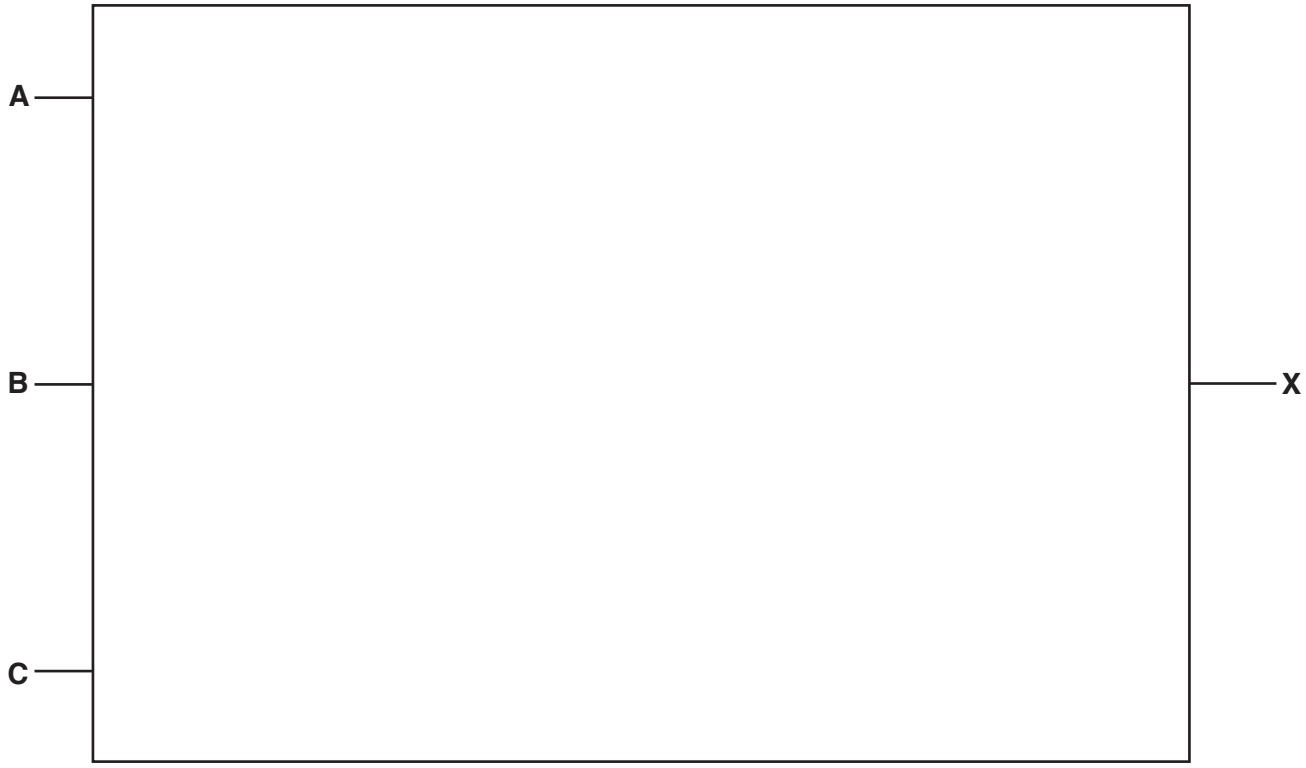
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[Turn over

6 Consider the logic statement:

X = 1 if ((A is NOT 1 OR B is 1) NOR C is 1) NAND ((A is 1 AND C is 1) NOR B is 1)

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



[6]

(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 Translators, such as a compiler and an interpreter, are used when writing and running computer programs.

Describe how a compiler and an interpreter translates a computer program.

Compiler .....

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Interpreter .....

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[6]

8 A supermarket uses a barcode scanner to read the barcodes on its products.

(a) Describe how the barcode scanner reads the barcode.

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[4]

(b) Explain how the barcode system could help the supermarket manage its stock.

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[3]

(c) An infrared touch screen is used to view and navigate the supermarket stock system.

Explain how the infrared touch screen detects a user's touch.

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[4]

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(d) The supermarket uses secondary storage and off-line storage to store data about its stock.

Explain what is meant by secondary storage and off-line storage.

Secondary storage .....

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Off-line storage .....

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[4]

9 A business wants to use a biometric security system to control entry to the office.

The system will use a biometric device and a microprocessor.

Explain how the biometric security system will make use of the biometric device and the microprocessor to control entry to the office.

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[6]

10 RockICT is a music business that has a website to allow customers to view and buy the products it sells.

The website consists of web pages.

(a) Describe what is meant by HTML structure and presentation for a web page.

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.....[4]

(b) The URL for the music company's website is:

https://www.rockict.net/index.htm

Part 1 **Part 2**

(i) Identify what **Part 1** and **Part 2** represent in this URL.

Part 1 .....

Part 2 .....
[2]

(ii) Describe what is meant by **https**.

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.....[2]

(c) When a customer enters the website, a message is displayed:

"RockICT makes use of cookies. By continuing to browse you are agreeing to our use of cookies."

Explain why the music company uses cookies.

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[2]

(d) The music company is concerned about the security of its website.

The company uses a proxy server as part of its security system.

Describe the role of a proxy server in the security system.

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[4]

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