Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

3009298472 8

COMPUTER SCIENCE **0478/13**

Paper 1 Theory **October/November 2017**

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.

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.

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

This document consists of **11** printed pages and **1** blank page.

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1 A washing machine has a small display screen built into it.

One use of the display screen is to show an error code when a problem has occurred with a washing cycle.

(a) State whether the display screen is an **input**, **output** or **storage device**.

.....[1]

(b) The display screen shows a hexadecimal error code:

E04

This error code means that the water will not empty out of the washing machine.

Convert this error code to binary.

[3]

(c) State why hexadecimal is used to display the error code.

.....

.....

.....

.....[1]

(d) Identify **three** sensors that could be used in the washing machine.

State what each sensor could be used for.

Sensor 1 .....

Use .....

.....

Sensor 2 .....

Use .....

.....

Sensor 3 .....

Use .....

.....

[6]

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2 Data files are stored in different file formats.

Complete the table by providing a suitable file format for each file type. The first one has been done for you.

File type	File format
Pictures	.JPEG
Text	
Sound	
Video	

[3]

3 **(a)** An example of a Uniform Resource Locator (URL) is:

http://www.cie.org.uk/index.htm

Part 1 Part 2 Part 3

Identify the **three** parts that make up this URL.

Part 1 .....

Part 2 .....

Part 3 .....

[3]

(b) Describe what is meant by an Internet Protocol (IP) address.

.....

.....

.....

.....

.....

.....

.....

.....[4]

4 **Six** components of a computer system and **six** descriptions are shown.

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

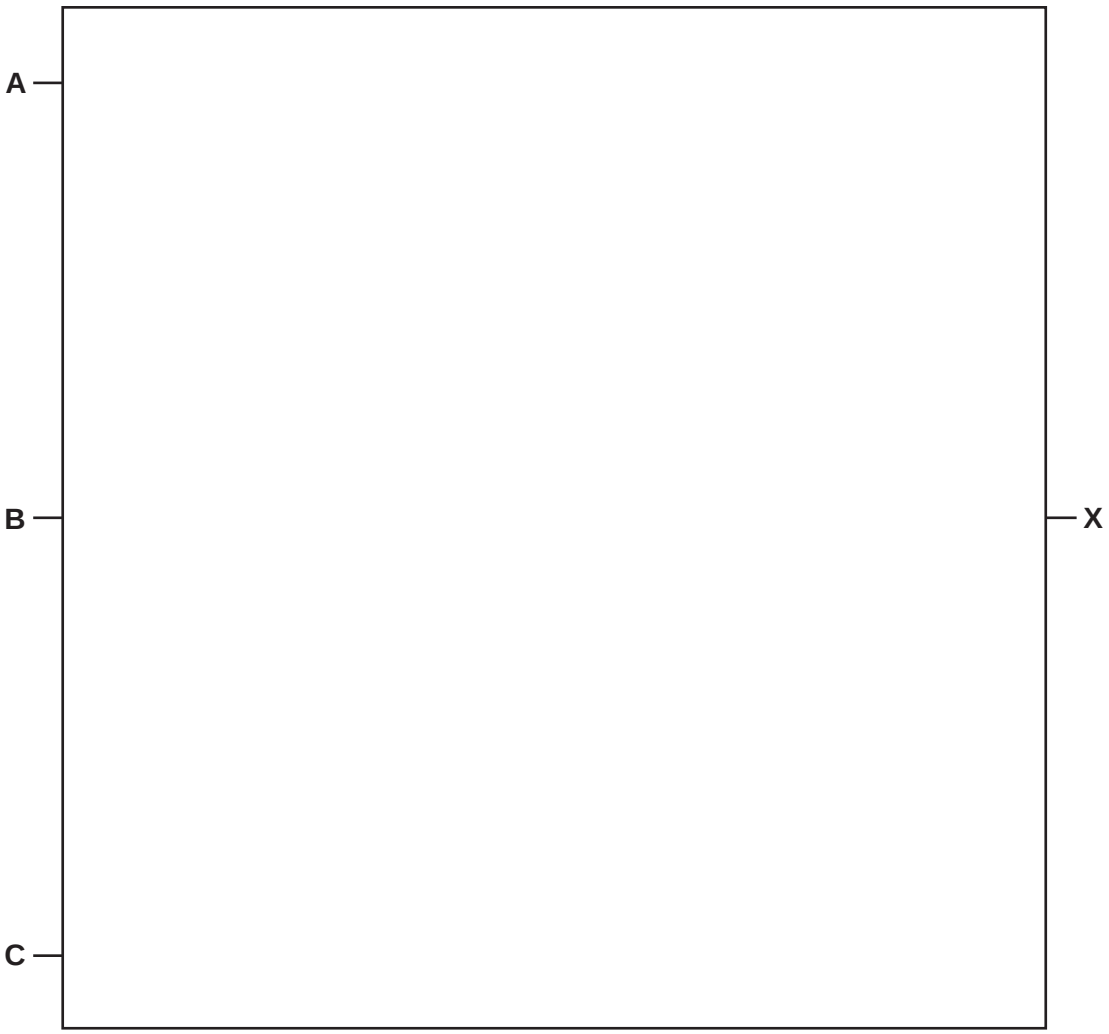
Component	Description
Arithmetic Logic Unit (ALU)	Used to connect together the internal components of the CPU.
Buses	Used to carry out calculations on data.
Control Unit (CU)	Used to temporarily hold data and instructions during processing.
Immediate Access Store (IAS)	Used to allow interaction with the computer.
Input/Output	Used to hold data and instructions before they are processed.
Registers	Used to manage the flow of data through the CPU.

[5]

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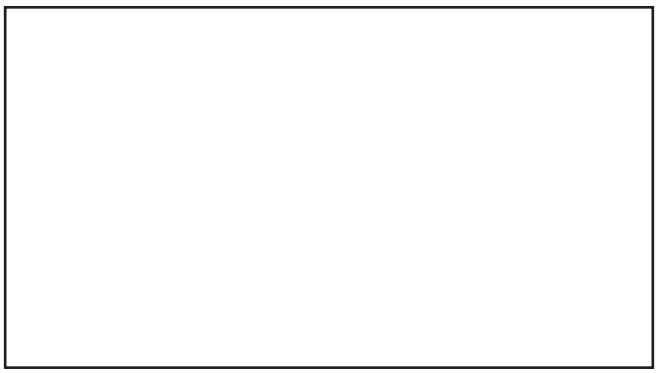
5 **(a)** Draw a logic circuit for the logic statement:

X = 1 if ((A is 1 AND B is 1) OR (A is NOT 1 AND C is 1))



[4]

(b) Draw the symbol for an **XOR** gate and explain the function of this logic gate.



Explanation .....

.....

.....

.....

.....

.....[5]

6 Describe the operation of a 2D scanner and a 3D scanner.

2D .....

.....

.....

.....

.....

.....

3D .....

.....

.....

.....

.....

.....

[6]

7 **Six** statements about firewalls are shown.

Tick (✓) to show whether each statement is **true** or **false**.

Statement	true (✓)	false (✓)
Firewalls can monitor incoming and outgoing traffic.		
Firewalls operate by checking traffic against a set of rules.		
Firewalls cannot block access to a certain website.		
Firewalls can be software and hardware.		
Firewalls can act as intermediary servers.		
Firewalls can block unauthorised traffic.		

[6]

8 **(a)** Data is valuable. It needs to be kept secure and it can easily be damaged.

Give **three** different ways that data can be accidentally damaged.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) The Secure Socket Layer (SSL) protocol can be used to securely transmit data in online banking.

State **three** other different applications that use SSL.

Application 1 .....

Application 2 .....

Application 3 .....

[3]

(c) Online banking is increasing in popularity.

Online banking can be a risk as it can raise a number of security issues. SSL can be used as a security method to make online banking safer.

Identify and describe **three** other security methods that could be used to make online banking safer.

Security method 1 .....

.....

.....

.....

Security method 2 .....

.....

.....

.....

Security method 3 .....

.....

.....

.....

[6]

9 **(a)** Optical storage media can be used to store data.

Describe how the data is read from a Compact Disc (CD).

.....

.....

.....

.....

.....

.....

.....

.....[4]

(b) Kamil wants to store a 16-bit colour image file. The image size is 1000 pixels.

Calculate the size of the file.

Give your answer in **bytes**. Show your working.

Working .....

.....

.....

.....

Answer ..... **bytes**

[2]

(c) Describe the differences between primary and secondary storage.

.....

.....

.....

.....

.....

.....

.....

.....[4]

10 **Six** statements about assembly language are shown.

Tick (✓) whether the statement is **true** or **false**.

Statement	true (✓)	false (✓)
Assembly language uses mnemonic codes.		
Assembly language programs do not need a translator to be executed.		
Assembly language is a low-level programming language.		
Assembly language is specific to the computer hardware.		
Assembly language is machine code.		
Assembly language is often used to create drivers for hardware.		

[6]

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