Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER					

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/12**

Paper 1 **May/June 2015**

2 hours

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
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.

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

Answer **all** questions.

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.

This document consists of **13** printed pages and **3** blank pages.

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[Turn over

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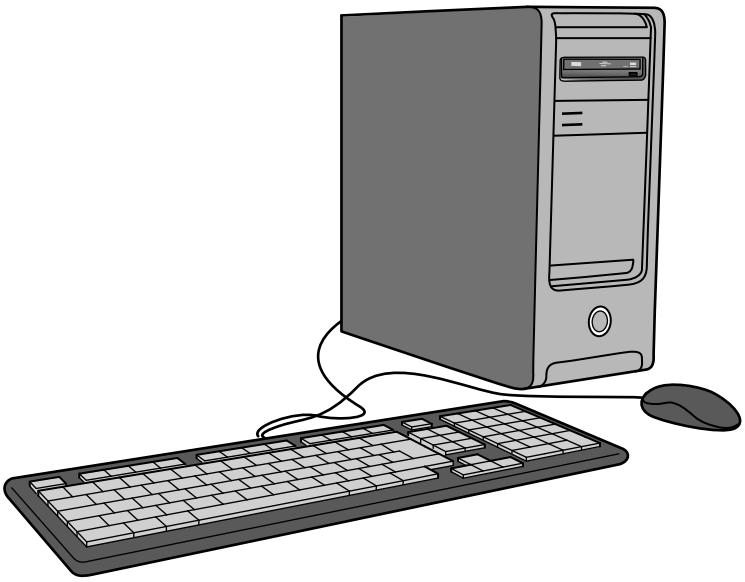
1 This diagram shows a tower PC.



(a) Name **two** input devices apart from a keyboard and mouse, which could connect directly to the tower.

1 .....

2 .....
[2]

(b) Name **two** storage **devices** which would be available in the PC shown above.

1 .....

2 .....
[2]

(c) Name **two** output devices which could connect directly to the PC shown above.

1 .....

2 .....
[2]

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2 Below is a list of statements. Each statement is true for only one of the given methods of implementation. Tick the method which matches the statement.

	Parallel running ✓	**Direct Changeover** ✓	**Pilot running** ✓
All of the old and new systems run at the same time.			
If the system fails in one branch, the rest of the company is not affected.			
The new system has to be completely free of errors before implementation.			
The benefits of the new system are available immediately.			

[4]

3 Below is a list of uses of ICT.
Tick the device which would be most appropriate for each activity.

	Input device ✓	**Output device** ✓	**Storage device** ✓
Making a backup of work			
Typing a document			
Printing out student records			
Reading details from a bar code			
Making a soft copy for future use			

[5]

4 Tick whether the following items are found in user documentation only, technical documentation only or are found in both.

	User ✓	**Technical** ✓	**Both** ✓
Systems flowchart			
How to save a document			
List of variables			
The purpose of the system			

[4]

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5 There are a number of methods of direct data entry.

Complete the sentences using words from the list below.

(a) The method of inputting bank codes from the bottom of a cheque is called

.....[1]

(b) The device used for inputting details from a label on a product is called

.....[1]

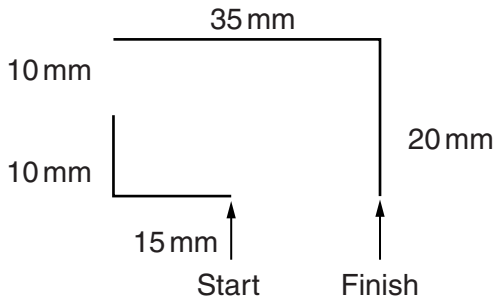
(c) The device used for inputting data directly from a bank card is called

.....[1]

a bar code reader	**a PIN pad**	**OMR**
MICR	**a keyboard**	**a graphics tablet**
a mouse	**a chip reader**	

6 A floor turtle can use the following instructions:

INSTRUCTION	MEANING
FORWARD *n*	Move *n* mm forward
BACKWARD *n*	Move *n* mm backward
LEFT *t*	Turn left *t* degrees
RIGHT *t*	Turn right *t* degrees
PENUP	Lift the pen
PENDOWN	Lower the pen



The turtle is facing up the page and the pen is up.

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A student has written the following set of instructions to make the floor turtle draw the above shape.

1. PENDOWN
2. LEFT 90
3. FORWARD 15
4. RIGHT 90
5. PENUP
6. FORWARD 20
7. RIGHT 90
8. PENUP
9. FORWARD 90
10. RIGHT 35
11. FORWARD 20

Although the first **four** instructions are correct, this set of instructions would not draw the shape exactly as shown. **One** instruction has been missed out and **four** are incorrect.

(a) Write down the missing instruction and indicate where it should be positioned in the list of instructions provided.

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.....[1]

(b) Identify the **four** incorrect instructions and state the correct instructions to be used.

1 .....

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2 .....

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3 .....

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4 .....

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[4]

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7 A microprocessor controlled washing machine is fitted with a number of sensors.

(a) Tick **three** sensors which would be used in such a system.

	✓
Pressure sensor	
Height sensor	
Wind speed sensor	
Sound sensor	
Temperature sensor	
Moisture sensor	
Cold sensor	
Detergent sensor	

[3]

(b) Describe the actions taken by a microprocessor during a wash cycle, based on the readings from those sensors identified in part **(a)**.

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.....[5]

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8 A bank has introduced a system whereby its customers will use contactless smart cards to make purchases. This method of payment involves customers holding their card close to a reader at shopping outlets and restaurants.

Discuss the advantages and disadvantages of this method of payment compared to using chip and PIN cards.

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.....[6]

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9 **(a)** Explain how a VLOOKUP function works, using the example of VLOOKUP(38,A2:C10,3,FALSE).

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.....[4]

(b) A spreadsheet contains the following data and formula.

	D	E	F	G	H	I
1	Months in employment	Job description	Name			
2	31	Teacher	John		=VLOOKUP(33,D2:F10,3)	
3	34	Chemist	Avtar			
4	39	Engineer	Ahmed			
5	43	Lecturer	Ho			
6	32	Bricklayer	David			
7	35	Manager	Jose			
8	38	Shopkeeper	Simon			
9	33	Zoo owner	James			
10	23	Explorer	Intikhab			
11						
12						

Explain why the cell H2 might not contain James. Suggest the value that would be contained in that cell, giving reasons why.

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.....[4]

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10 Explain how the number of jobs available to workers has been affected by the use of ICT in commerce and industry, using specific examples. Refer in your answer to jobs created as well as job losses.

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.....[5]

11 Aftab wants to create a network using a PC and two laptop computers he has bought for his family. All have network cards fitted. He has already purchased network protection software. He wishes to use them for online banking.

Name and describe the use of **four** additional items, apart from cables, he would need in order to set up this network.

Item 1 .....

Use .....

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Item 2 .....

Use .....

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Item 3 .....

Use .....

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Item 4 .....

Use .....

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[8]

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12 A school in the UK holds a sports day every year. Students compete in a number of athletics events during the day.

The results of all events, together with suitable photographs, are to be included in the school newsletter on its website. Initially the results will be stored in a spreadsheet.

Describe how the sports day part of the newsletter will be produced.

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.....[6]

13 Tick **three** drawbacks in terms of costs to banks of introducing online banking.

	✓
Initial purchase of hardware and software is expensive	
Bank workers will have to be paid more	
Extra buildings will be need to be rented	
System maintenance costs may be high	
Cost of lighting and electricity will be higher	
More cashiers will need to be employed	
More security staff will need to be employed	
Redundancy payments will need to be made to cashiers who are now unemployed	

[3]

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14 A headteacher wishes to store details of her students in a computer database. She has been given an example of one student record by the school secretary:

Strauss, Johann, SR132516, 83, 01/09/2011

This corresponds to family_name, first_name, Student_Id, Maths_test_score, joined_the_school.

The file is currently stored in the form of plain text with each record separated by a line break.

(a) Give a file extension which is appropriate for this file.

.....[1]

(b) For each field identify the **most** appropriate data type. The Maths_test_score is used in calculations.

Field name	Data type
family_name	
first_name	
Student_Id	
Maths_test_score	
joined_the_school	

[5]

(c) Identify the **two** fields for which a format check would be the **most** appropriate validation check. In each case describe how the format check would work.

1 .....

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2 .....

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[4]

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(d) The school secretary will use a screen input form to make it easier to enter data on the new system.

Design a suitable screen input form to enter the details of one student using the fields given in part **(b)** but leaving the field contents blank.

It should contain appropriate spacing for each field, as well as navigation aids and other appropriate features of a screen input form.

[5]

15 One of the stages in systems analysis and design is called development and testing.

Describe the different testing strategies that can be used on a new system.

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.....[6]

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16 An oil prospecting company wants to use an expert system to help it to decide where to drill for oil.

(a) Describe how such a system would work.

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.....[6]

(b) Give **two** different uses of expert systems for diagnosis.

1 .....

2 .....
[2]

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