

Centre Number						Candidate Number				
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Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
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TOTAL	



General Certificate of Secondary Education
June 2015

Information and Communication Technology (Full Course)

45201

Unit 1 Systems and Applications in ICT

Wednesday 13 May 2015 9.00 am to 10.30 am

You will need no other materials.
You may use a calculator.

Time allowed

- 1 hour 30 minutes

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **fourteen** questions in total.
- Answer **all** questions in Sections A and B. In Section C answer **either** Question 14 **or** Question 15, which should be answered in continuous prose. In this question you will be marked on your ability to:
 - use good English
 - organise information clearly
 - use specialist vocabulary where appropriate.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.



J U N 1 5 4 5 2 0 1 0 1

Section A

Answer **all** questions in the spaces provided.

1 For parts **(a)** to **(h)**, write the letter for your answer in the box given.

1 (a) Which **one** of the following is an input device?

- A** Flash memory
- B** Inkjet printer
- C** Microphone
- D** Monitor

[1 mark]

Answer

1 (b) Which **one** of the following is an output device?

- A** Dial-up modem
- B** Digital projector
- C** DVD-ROM
- D** Graphics tablet

[1 mark]

Answer

1 (c) Which **one** of the following is a storage medium?

- A** Hard disk
- B** Keyboard
- C** Scanner
- D** SMS

[1 mark]

Answer



1 (d) Which **one** of the following best describes the scrambling of data so that it appears meaningless until unscrambled using a key?

- A** Encryption
- B** Image/code recognition
- C** Security question
- D** Selective drop-down menu

[1 mark]

Answer

1 (e) For which **one** of the following is an Internet user most likely to use a forum?

- A** Discuss a topic that interests them
- B** Make a telephone call
- C** Send a fax
- D** Use route guidance

[1 mark]

Answer

1 (f) Which **one** of the following is a common feature of presentation software?

- A** Cookie
- B** Search criteria
- C** Timing
- D** Use a formula

[1 mark]

Answer

1 (g) Which **one** of the following is a common procedure used to access a computer system?

- A** Export data
- B** Log off
- C** Log on
- D** Shut-down menu

[1 mark]

Answer

Turn over ►



1 (h) Which **one** of the following is a printed circuit board that holds the main internal components of a computer?

- A Backing storage
- B Motherboard
- C Sound card
- D Video card

[1 mark]

Answer

8

2 (a) The list below shows a range of equipment used in ICT. For each part of this question, give the device that **best** matches the definition given.

- | | |
|--------------------------|----------------|
| A Buzzer | F RFID reader |
| B Dongle | G Video camera |
| C File server | H VoIP |
| D Interactive whiteboard | I Web cam |
| E Joystick | |

Choose your answers from the **list given above**. Write the letter for your answer in the box given.

2 (a) (i) A method of using the internet to make digitised voice telephone calls.

[1 mark]

Answer

2 (a) (ii) A device that gathers information from radio signals sent by a tag.

[1 mark]

Answer

2 (a) (iii) A computer that is connected to a network and manages the storage of data.

[1 mark]

Answer



2 (b) (i) Give **two advantages** to people working in organisations of using new fast mobile connections such as 4G.

[2 marks]

Advantage 1

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Advantage 2

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2 (b) (ii) Give **one disadvantage** to people working in organisations of using mobile communication networks such as 4G.

[1 mark]

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6

Turn over for the next question

Turn over ▶



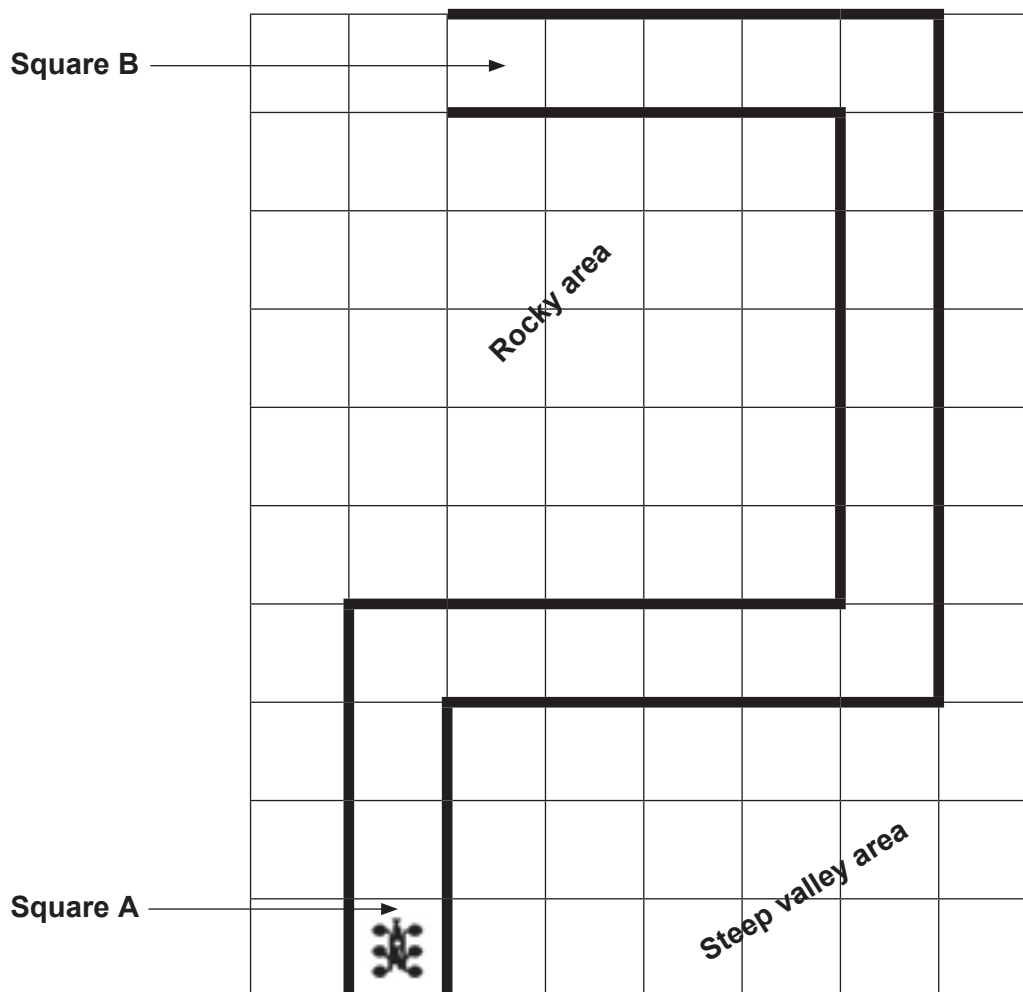
- 3 A computer controlled robotic rover called Nomad has been launched to the planet Mars to photograph areas of interest. Table 1 below shows the list of commands available to move Nomad.

Table 1

Command	Action taken by Nomad robot
Start	The robot starts to move from the square shown on the diagram.
Fdx	Moves the robot forward x squares. For example Fd1 would move the robot forward 1 square.
Lt90	Turns the robot left 90 degrees.
Rt90	Turns the robot right 90 degrees.
End	Ends the commands.

Shown below in **Figure 1** is the path Nomad must follow to avoid the steep valley and rocky areas to reach **Square B**. The starting point is **Square A**.

Figure 1



3 (a) Write the commands that will move the robot safely by **following** the path from **Square A** to **Square B**. Nomad is currently facing in the correct direction. Refer to **Table 1** and **Figure 1**.

[3 marks]

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3 (b) Explain why commands must be accurate when controlling devices such as robots.

[2 marks]

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Turn over for the next question

Turn over ▶



4 (a) People can use graphics software packages to create images.

4 (a) (i) Tick **one** box to show which feature would be best to remove sections drawn by mistake.

[1 mark]

	Tick one box only
Erasing	
Layering	
Morphing	
Repeating	
Rotating	
Shading	

4 (a) (ii) Tick **one** box to show which feature would be best to produce the effect of one picture transforming into another picture.

[1 mark]

	Tick one box only
Erasing	
Layering	
Morphing	
Repeating	
Rotating	
Shading	

4 (a) (iii) Tick **one** box to show which feature would be best to turn an image clockwise or anti-clockwise.

[1 mark]

	Tick one box only
Erasing	
Layering	
Morphing	
Repeating	
Rotating	
Shading	



4 (a) (iv) Tick **one** box to show which feature would be best to put images on top of each other on the same document.

[1 mark]

	Tick one box only
Erasing	
Layering	
Morphing	
Repeating	
Rotating	
Shading	

4 (b) (i) Describe what the term ‘airbrushing’ means when manipulating the look of photographic images.

[2 marks]

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4 (b) (ii) Many magazines use the airbrushing tool. Describe why some people are concerned about the use of airbrushing to manipulate the look of photographic images.

[2 marks]

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Turn over for the next question

Turn over ▶



5 Many students use the Internet to gather data when completing school projects.

5 (a) Tick **one** box that shows the most sensible way to check information on a website is accurate.

[1 mark]

	Tick one box only
Access only older websites	
Compare with other reliable sources	
Install a firewall	
Use a search engine	

5 (b) Organisations use data validation to reduce data entry errors. Give a suitable reason why data validation cannot be relied on to prevent all errors.

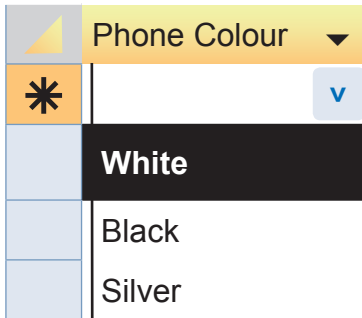
[1 mark]

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5 (c) A mobile phone shop uses the data validation method shown below, to ensure only valid options are entered in the Phone Colour field of their products database.



Tick **one** box that shows the name of the type of data validation shown above.

[1 mark]

	Tick one box only
Check digit	
Look-up list	
Presence check	
Range check	



5 (d) (i) Name **one** method of data verification.

[1 mark]

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5 (d) (ii) Describe how the method of data verification given in your answer above could be used to improve the accuracy of data.

[2 marks]

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5 (e) Describe how a grammar checker helps improve the accuracy of documents.

[2 marks]

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5 (f) Tick **one** box that best describes a method of inserting the contents of database fields onto a membership card.

[1 mark]

	Tick one box only
Mail merge	
Mail protection	
Mail range	
Mail service	

Question 5 continues on the next page

Turn over ▶



5 (g) Some organisations are concerned about the effect that replacing computer equipment can have on the environment.

Give **two** alternative approaches that organisations can take to minimise the harmful effects of throwing away older computer equipment that ends up in land fill sites.

[2 marks]

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11



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ANSWER IN THE SPACES PROVIDED**

Turn over ▶



6 Computerised data logging is used by scientists to collect and store data about active volcanoes over a period of time.

6 (a) Tick **one** box to show the device best suited to taking readings.

[1 mark]

	Tick one box only
Actuator	
Magnetic swipe card	
OCR reader	
Sensor	

6 (b) (i) Give **two advantages** of computerised data logging compared with logging data manually.

[2 marks]

Advantage 1

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Advantage 2

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6 (b) (ii) Give **two disadvantages** of computerised data logging compared with logging data manually.

[2 marks]

Disadvantage 1

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Disadvantage 2

.....

6 (c) Tick **one** box to show which is **not** an example of information.

[1 mark]

	Tick one box only
20-08-74 is the date of birth	
£34.99 is the price	
53546768	
6 is the size	



6 (d) Describe what is meant by the term 'data'.

[2 marks]

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8

7 Microprocessors are found in a wide range of devices used at home, in everyday life and in the work place.

7 (a) Give **one disadvantage** of using microprocessors to control devices in the home.

[1 mark]

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7 (b) Describe the use of microprocessors in controlling a washing machine in the home.

[2 marks]

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7 (c) Outline **two** possible uses for microprocessors in a theme park ride.

[2 marks]

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Turn over ▶



8 Operating systems are a vital part of the way in which computers function.

8 (a) State what the 'copy' file operation is used for in operating systems.

[1 mark]

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8 (b) Tick **two** boxes to show other file operations carried out by operating systems.

[2 marks]

	Tick two boxes only
Attach	
Forward	
Group	
Load	
Rename	

8 (c) Give **one** feature of a multi-tasking operating system.

[1 mark]

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8 (d) (i) Multi-user is another type of operating system. Give **three** features of a multi-user operating system.

[3 marks]

Feature 1

Feature 2

Feature 3

8 (d) (ii) Name **one** type of operating system, other than multi-tasking or multi-user.

[1 mark]

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8



9 (a) Computer systems have a range of software and hardware features. Some of which are designed to help users with disabilities.

9 (a) (i) Tick **two** boxes that best show examples of hardware and software used to help computer users with disabilities.

[2 marks]

	Tick two boxes only
External hard drive	
Fan	
Modem	
Screen magnifiers	
Spoken text	

9 (a) (ii) Name **two** other hardware devices or pieces of software not listed above that can be used to aid computer users with disabilities.

[2 marks]

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9 (b) (i) What is meant by un-installing software?

[1 mark]

.....

9 (b) (ii) Why do users sometimes need to un-install software?

[1 mark]

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6

Turn over for the next question

Turn over ▶



10 A mouse and touch pad are input devices that are often used with a Graphical User Interface where a screen pointer is used to select options.

10 (a) (i) Give **one advantage** of using a mouse to select options compared with a touch pad. **[1 mark]**

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10 (a) (ii) Give **one disadvantage** of using a mouse to select options compared with a touch pad. **[1 mark]**

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10 (b) (i) Tick **one** box to show the input device best suited to scanning printed data on packaging. **[1 mark]**

	Tick one box only
Bar-code reader	
Keyboard	
Midi instrument	
OMR Reader	
Remote control	

10 (b) (ii) Tick **one** box to show the input device best suited to entering text. **[1 mark]**

	Tick one box only
Bar-code reader	
Keyboard	
Midi instrument	
OMR Reader	
Remote control	



10 (b) (iii) Tick **one** box to show the input device best suited to pausing a DVD player.

[1 mark]

	Tick one box only
Bar-code reader	
Keyboard	
Midi instrument	
OMR Reader	
Remote control	

10 (c) Speakers and headphones can both be used to output sound from a computer system.

10 (c) (i) Give **one advantage** of using speakers to output sound compared with using headphones.

[1 mark]

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10 (c) (ii) Give **one disadvantage** of using speakers to output sound compared with using headphones.

[1 mark]

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7

Turn over for the next question

Turn over ▶



Section B

Answer **all** questions in the space provided.

- 11** Crystal is a new online business that will allow customers to download PC games. Below is a plan for part of a possible database table that might be used to store information on the games they supply. The plan shows possible fields and example records.

Game Title	Developer	Age Rating	Price (£)	Release Date
Duke of the North	Reflection	12	14.99	08/02/2015
Giant Galaxy	Aardvark Surgery	7	9.99	20/10/2014
Dave the Bot	Signal	3	4.99	09/07/2014
Karaoke Gano	Default Surprise	7	19.99	12/04/2015
Spaghetti Soccer Cup	Sheep Toad	3	24.99	18/07/2014
Catch the Caught	Serious Business	3	9.99	13/01/2015
Super Soup Detectives	Crustacean Memo	12	4.99	26/03/2015

- 11 (a)** State what is meant by the term 'key field'. **[1 mark]**

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- 11 (b)** There is no key field in this database table yet. Tick **one** box to show the most suitable key field. **[1 mark]**

	Tick one box only
Game ID	<input type="checkbox"/>
Genre	<input type="checkbox"/>
Platform	<input type="checkbox"/>
Total Downloads	<input type="checkbox"/>



11 (c) Tick **one** box to show the most appropriate data type for the Price (£) field.

[1 mark]

	Tick one box only
Currency	
Date	
Text	
Yes/No (Boolean)	

11 (d) Crystal is planning to have separate tables for Game Information, Customer Details and Download Information. Tick **two** boxes to show benefits given by linking these three tables together.

[2 marks]

	Tick two boxes only
Faster to update information	
More games will be downloaded by customers	
More protection from hackers	
No need for data validation	
Reduces duplication of data	

11 (e) (i) If the possible database table shown was sorted in **descending** order of Price (£) which Game Title would be at the top?

[1 mark]

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11 (e) (ii) If the possible database table shown was sorted in **ascending** order of Release Date which Game Title would be at the top?

[1 mark]

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Question 11 continues on the next page

Turn over ▶



11 (f) Describe possible dangers of a government accessing personal data stored about members of the public.

[5 marks]

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12

A charity runs a home for abandoned cats. The charity has carried out a number of collections to raise money in different locations around the town. Collections are carried out by four teams of people, called Red, Blue, Green and Yellow. The charity uses a spreadsheet to calculate the amount of money raised by the four teams and to calculate the Grand Total.

	A	B	C	D	E	F	G	H	I	J
1	Cats Home Collection									
2	Team	Supermarket	High Street	School and College	Football Stadium	Lowest Amount Collected	Highest Amount Collected	Average	Team Percentage	Team Total
3	Red	£174.00	£43.00	£123.00	£204.00	£43.00	£204.00	£136.00	23.7	£544.00
4	Blue	£102.00	£53.00	£158.00	£181.00	£53.00	£181.00	£123.50	21.5	£494.00
5	Green	£155.00	£57.00	£136.00	£325.00	£57.00	£325.00	£168.25	29.3	£673.00
6	Yellow	£78.00	£82.00	£111.00	£312.00	£78.00	£312.00	£145.75	25.4	£583.00
7										
8									Grand Total	£2,294.00

12 (a) (i) Tick **one** box to show the function that calculates the highest amount collected by each team.

[1 mark]

	Tick one box only
Average	
If	
Max	
Min	

12 (a) (ii) Tick **one** box to show the function that calculates the lowest amount collected by each team.

[1 mark]

	Tick one box only
Average	
If	
Max	
Min	

Turn over ►



12 (b) (i) Give the formula that has been used to calculate the team total for the Red team. **[1 mark]**

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12 (b) (ii) The percentage for the Red team was calculated using the formula =J3/\$J\$8*100. Describe why an absolute cell reference is used. **[2 marks]**

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12 (c) Name **two** formatting features that have been used to improve the presentation of the spreadsheet. **[2 marks]**

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12 (d) The charity wants to gather data from people in the town. Describe the advantages and disadvantages of using an online form, rather than a paper-based questionnaire to capture this data.

[5 marks]

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Turn over for the next question

Turn over ▶



13 A wiki is a collaborative way of gathering and presenting information. Sometimes, wikis are thought to include inaccurate information.

13 (a) Tick **two** boxes which show sensible measures that wiki administrators can use to help maintain the accuracy of information.

[2 marks]

	Tick two boxes only
Allow users to report any inaccurate information they see	
Encrypt the information displayed on the wiki	
Keep a record of changes made and the names of the users who changed a wiki entry	
Not allow any users to make changes to wiki entries	
Use a firewall to protect the wiki servers	

13 (b) State what is meant by the term 'podcast'.

[1 mark]

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13 (c) Ellen Wey is a school student who uses a blog to advertise monthly music concerts she is organising to raise money for charity.

Give **two advantages** to Ellen of using the blog to publicise the charity music concerts compared with using posters.

[2 marks]

Advantage 1

.....

Advantage 2

.....



13 (d) Give **two disadvantages** to other students in the school of getting information about the charity concerts from Ellen’s blog compared with getting information from posters. **[2 marks]**

Disadvantage 1

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Disadvantage 2

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13 (e) Ellen Wey’s teacher wants to create a new information system to store examination results. Describe, using examples, the difference between normal and extreme data when testing a computer system. **[5 marks]**

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Section C

You should answer **either** Question 14 **or** Question 15, but **not** both.

You will be marked on your ability to use good English, to organise information clearly and to use specialist vocabulary where appropriate.

Either

14 Discuss the ways people can behave responsibly and stay safe online when using ICT-based communication.

[12 marks]

This space is available for planning your answer, if you wish to use it.

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or

15 Discuss ways of preventing unauthorised access to computer systems.

[12 marks]

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END OF QUESTIONS

12



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