

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

**MARK SCHEME for the May/June 2015 series**

**0417 INFORMATION AND COMMUNICATION  
TECHNOLOGY**

**0417/12**

Paper 1 (Written), maximum raw mark 100

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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1 (a) **Two** from:

Joystick  
Microphone  
Tracker ball  
Concept keyboard  
Touch screen  
Scanner  
Digital camera  
Graphics tablet  
Webcam

[2]

(b) **Two** from:

Hard disk drive  
Optical disc drive  
Flash memory card reader/writer  
Solid State Drive

[2]

(c) **Two** from:

Dot matrix printer  
Laser printer  
Inkjet printer  
Speakers  
Monitor

[2]

2

	<b>Parallel running</b> ✓	<b>Direct Change- over</b> ✓	<b>Pilot running</b> ✓
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		✓	

[1]

[1]

[1]

[1]

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3

	<b>Input device</b> ✓	<b>Output device</b> ✓	<b>Storage device</b> ✓	
Making a backup of work			✓	[1]
Typing a document	✓			[1]
Printing out student records		✓		[1]
Reading details from a bar code	✓			[1]
Making a soft copy for future use			✓	[1]

4

	<b>User</b> ✓	<b>Technical</b> ✓	<b>Both</b> ✓	
Systems flowchart		✓		[1]
How to save a document	✓			[1]
List of variables		✓		[1]
The purpose of the system			✓	[1]

5 (a) MICR [1]

(b) a bar code reader [1]

(c) Chip reader [1]

6 (a) FORWARD 10 is missing before first PENUP/5<sup>th</sup> instruction/after 4<sup>th</sup> instruction/first RIGHT 90/ between 4<sup>th</sup> and 5<sup>th</sup> instruction [1]

(b) First FORWARD 20 (6) should be FORWARD 10 [1]

Second PENUP (8) should be PENDOWN [1]

FORWARD 90 (9) should read FORWARD 35 [1]

RIGHT 35 (10) should read RIGHT 90 [1]

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7 (a)

Pressure sensor	✓	[1]
Height sensor		
Wind speed sensor		
Sound sensor		
Temperature sensor	✓	[1]
Moisture sensor	✓	[1]
Cold sensor		
Detergent sensor		

(b) Five from:

Microprocessor stores pre-set values

Reads data from sensors

Microprocessor compares readings with pre-set value

If temperature is at or above the pre-set value microprocessor sends a signal to turn the heater off

If temperature is below pre-set value microprocessor sends a signal to turn the heater on

At start of cycle, microprocessor sends a signal to open valve to let in water

If water level reached microprocessor sends a signal to switch off valve

If pressure is above preset value microprocessor sends a signal to sound alarm

Microprocessor checks pressure reading and calculates the amount of water to use [5]

8 Six from:

Contactless systems reduce the time taken by retailers to deal with each customer

Customers don't need to queue for so long as contactless cards speed up the transactions/ quicker than inserting the card and entering the PIN

Only checks whether the card is not cancelled or stolen not always making a full check on what the balance of the holder's account is.

Customers are limited in what they can buy as transactions must be below a certain value

In some cases, the customer can unwittingly pay for another customer's purchase if they get too close to the terminal.

A thief armed with a suitable reader, within a few feet of the customer, would be able to interrogate all of the cards in their wallet without their knowledge.

If customer lost card a thief could make purchases without having to know a PIN

Customer can pay twice as terminal may detect the card for contactless payment but has inserted the card to use the PIN.

Customer doesn't have to worry about PIN being overseen/shoulder surfed [6]

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9 (a) **Four** from:

Searches for the value 38  
 38 is the lookup value  
 Searches in the range A2:C10  
 It returns the value that is contained in the third column of the range...  
 ...and on the same row as the lookup value...  
 ...if it's an exact match of 38

[4]

(b) **Four** from:

There is no return value/FALSE/0...  
 ...to force an exact match  
 The data is not sorted on column D  
 So only an approximate match will be made  
 First four items in column D are sorted so as soon as it gets to D6 it's is no longer sorted...  
 ...so it doesn't get to 33...  
 So formula will return David

[4]

10 **Five** from:

**Max four** from:

e.g.

Fewer secretaries needed – computers provide much of the secretarial expertise once provided by a secretary  
 Fewer general office staff needed – workload has been reduced by the storage capacity of computers  
 Computerised accounting packages – fewer accountants needed  
 Stock control used to require specialists but is now done through computerised checkout systems  
 Security systems – computerised security gates have caused a reduction in the number of people employed for store security  
 Automated return and issue systems in libraries have led to a number of library staff being made redundant  
 Production lines are now operated by robots reducing the number of jobs available to production line workers

**Max four** from:

Increase in employment of ICT systems/network maintenance workers  
 Increase in employment of robot maintenance workers  
 Increase in employment of programmers  
 Increase in employment of web designers  
 Increase in employment of computer operators  
 Increase in employment of van drivers by online retail industries  
 More workers needed to manufacture robots

[5 max]

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**11 Four** matched pairs from:

Modem/Router

To connect the network to the internet

Hub/Switch

To connect the computers to form a network

(Internet) browser

To access the bank's website/to search on different websites/allow access to internet (if not given elsewhere)

ISP (contract)

To access the internet/to provide internet services

Telephone line

To connect the router to the internet

[8]

**12 Six** from:

Load/open web authoring package

Create tables

Take photo using digital camera/ordinary camera or video camera

Upload from camera

Save the image/video

Load webpage

Import/copy and paste/insert image into document/embed image source into markup

Position the image/resize image/edit image

Type text/import text files

Edit/format text

Insert spreadsheet

Insert/copy data from spreadsheet

Paste data into table

Create chart from spreadsheet

Edit chart

Insert chart/ copy and paste chart

Upload web page to internet

[6]

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13

	✓	
Initial purchase of hardware and software is expensive	✓	[1]
Bank workers will have to be paid more		
Extra buildings will be need to be rented		
System maintenance costs may be high	✓	[1]
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	✓	[1]

14 (a) .csv/.txt/.rtf [1]

(b) Text/alphanumeric [1]  
 Text/alphanumeric [1]  
 Text/alphanumeric [1]  
 Numeric/Integer [1]  
 Date [1]

(c) Two matched pairs:

Student\_Id [1]  
 It would make sure that it would consist of two letters followed by 6 digits [1]

joined\_the\_school [1]  
 It would make sure that it would consist of two digits, a slash, two digits, a slash followed by 4 digits [1]

(d) All 5 correct fields – 2 marks  
 4 correct fields – 1 mark  
 fewer than 4 correct fields – 0 marks  
 Additional fields lose 1 mark each down to a minimum of 0 marks [2]

Three from:

Appropriate spacing for each field  
 Forward and backward buttons  
 Drop down boxes for joined\_school field/calendar to choose dates from  
 Information fills the page [3]

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**15 Six from:**

Testing modules with abnormal data  
 Testing modules with data that is outside the range  
 Testing modules with data that is of the wrong type/format/length  
 Testing modules with normal data  
 Testing modules with data that is within the range  
 Testing modules with data that is of the correct type/format/length  
 Testing modules with extreme data  
 Testing modules with data that is at the boundaries/ends of the range  
 After testing each module thoroughly...  
 ...testing the whole system  
 Description of user testing  
 Testing with live data

[6]

**16 (a) Six from:**

Uses interactive interface/interactive interface asks questions about geological profile  
 Answers to questions are typed in  
 geological profile is typed in  
 Further questions are asked based on previous responses  
 expert system analyses data  
 inference engine compares data...  
 ...compares data with that held in the knowledge base...  
 ...using rules base  
 matches are found  
 Probabilities of oil being present are suggested  
 Depths of likely deposits are suggested  
 Predictions of geological strata above the deposits of oil are output

[6]

**(b) Two from:**

Medical diagnosis  
 Car engine fault diagnosis  
 Computer fault diagnosis

[2]