



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

INFORMATION AND COMMUNICATION TECHNOLOGY

0417/12

Paper 1 Written

October/November 2016

MARK SCHEME

Maximum Mark: 100

Published

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This document consists of **9** printed pages.

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1 (a) Router/Broadband modem [1]

(b) Switch [1]

(c) Hub [1]

(d) Bridge [1]

2 (a) Two from:

Software is programs/set of instructions.
Software controls/runs a computer system/hardware. [2]

(b) (i) System(s) (software) [1]

(ii) For example: Operating system, file management system, utilities [1]

(iii) Application(s) (software) [1]

(iv) For example: Word processor, spreadsheet, database [1]

3

	input (✓)	output (✓)	backing storage (✓)
Motor		✓	
CD-R			✓
Webcam	✓		
Printer		✓	

[4]

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4

	true (✓)	false (✓)
If capital letters are used in emails, it is considered 'shouting'.	✓	
You should always use coloured text and coloured backgrounds in emails.		✓
You should reply to all spam emails.		✓
bcc means blind carbon copy.	✓	

[2]

4 correct answers – 2 marks
 2 or 3 correct answers – 1 mark
 1 correct – 0 marks

5 (a) Four from:

Real time collaboration/communication
 Multiple users are connected to the internet.
 See the same screen at all times in their web browsers
 Allows: texting, for example of the car details
 VOIP, for example, the delegates discussing the car range
 Full motion video to show the car being test driven

[4]

(b) Three from:

Webcams/cameras
 Large monitors/projector
 Microphones
 Speakers/headphone

[3]

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(c) **Three** matched pairs from:

Power cuts/load shedding...
 ...can lead to parts of the video-conference shutting down.
 Lip sync problems/time lag...
 ...this means that the picture is not running at the same speed as the sound.
 Need to consider time zone implications of when to hold the video-conference...
 ...some participants may be video-conferencing outside of work hours/in the night.
 Initial cost of hardware/software...
 ...expensive to buy extra hardware and software
 Needs reliable internet access...
 ...otherwise the video-conference will suffer interference/break down of signal.
 Difficult to stop them all talking at once/manage contributions...
 ...if more than one person talks at once it is difficult to hear what is said.
 Difficult to manage the video-conference starts on time...
 ...due to time differences/setting up issues.
 Difficult to keep participants on task...
 ...they are not in the same room so could be doing other things/not concentrating.
 Increased cost/time of training staff...
 ...The host of the conference would need training/participants may need training.
 Cost/time of technician/support staff...
 ...the support staff will need to be on hand in case of problems.
 Document cannot be signed...
 ...there will be only one copy of the document.
 Physical objects cannot be examined...
 ...this would need to be set up before the conference which takes time.

[6]

6

	Fixed Hard Disk (✓)	Blu-ray (✓)	Magnetic Tape (✓)	Memory card (✓)
Storing a database of books in a school library	✓			
Storing photographs in a digital camera				✓
Companies distributing HD movies		✓		
Storing the back up of a file server			✓	

[4]

7 (a) = IF (B3>75, "pass", "fail")
 1 mark IF ()
 1 mark parameter **B3>75**,
 1 mark "**pass**", "**fail**"

[3]

Mark deducted for any additional elements down to 0 marks

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(b) Normal data is data that is within the range/right data type. [1]

Abnormal data is data that is outside the range/wrong type. [1]

Extreme data is data that is on the edge of acceptability. [1]

8 Six from:

Examples

Advantages

Biometrics are unique...

...so others cannot sign people in/whereas with password/card systems someone else can sign you in.

Fingerprints/eyes are always with you...

...but a password/card can be lost.

Cannot be forgotten passwords can be forgotten

The user has to be present therefore more secure.

Typing in passwords can lead to errors on data entry...

...biometrics tend to be more reliable.

More difficult to forge...

...passwords can be copied/cards can be stolen.

Disadvantages

Personal liberty infringement...

...fingerprints/biometric must be stored.

Method is slower to enter system than passwords.

Equipment and setup is more expensive than producing cards.

The time taken to set up a store of fingerprints/eye prints can be a long time...

...quicker to set up a database of passwords.

If the finger is damaged/dirty it cannot be read passwords can be more reliable.

If dark glasses are worn retina cannot be read passwords are more reliable

If a voice is not understandable on a voice recognition system may not work.

Facial hair can stop facial recognition passwords are more reliable

A mark can be awarded for a reasoned conclusion

If one side of the argument i.e. all advantages/disadvantages then 3 marks max.

If both sides have been addressed but without expansions/differences then 4 marks max [6]

9 Three from:

Making a copy and giving it away to a friend or colleague without permission

Making a copy and lending it without permission

Making a copy and selling it without permission

Making a copy without permission from the author/licence holder

Using a single copy with multiple simultaneous use on a network

Using coding/images from the original copy in your own programs/modifying the original code

Renting out the original copy without permission [3]

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10 (a) Four from:

Enter data into/use the interactive user interface
 Questions are asked by the system
 The user answers the questions
 With yes or no answers
 Further questions are asked based on the previous answers
 The inference engine compares data
 Compares data with that held in the knowledge base...
 ...using the rules base/set of rules
 System produces probabilities/possible types of animal

[4]

(b) Two from:

Oil prospecting/rock classification
 Medical diagnosis
 Car engine fault diagnosis
 Chess
 Tax systems

[2]

(c)

<i>Field Name</i>	<i>Validation Check</i>
<i>Animal_ID</i>	Format check/Presence check
<i>Name_of_animal</i>	Presence check/type check/character check
<i>Animal_endangered?</i>	Character check/type check
<i>Years_on_register</i>	Range check

[4]

(d) Four from:**Three max**

A header and footer may be on every page to show consistency.
 Don't have to type it in on every page...
 ...saves time
 ...reduces errors

Three max

What is in that section of document/title of the sub-section
 Author of the document
 The page number
 The version
 The date
 File name/path
 Company logo/name

To gain full marks candidates must have an example and explanation.

[4]

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11 (a) Product_ID [1]

(b) Product_ordered [1]

(c) 1231 [1]

(d) 1 mark for each correct answer
1235, 1236 [2]

(e) Two from:

(=)[Quantity]*[Unit_price]

1 mark for [Quantity] *

1 mark for [Unit_price]

[2]

12 Four from:

A formula is a statement written by the user to be calculated.

An equation

A formula can contain values/references to cells/defined names.

Examples =A1+B1 etc.

A function is a piece of code designed to return specific values.

Pass parameters/variables to functions

Function has a pre-defined names in the software/reserved word.

They are used inside formulas.

A built in operation

Examples SUM()/AVERAGE()/ NOW() etc.

To gain full marks candidates need to mention both a function and formula.

[4]

13 (a) Two from:

Designed to help programmers/systems analysts...

...to improve a system.

...to maintain a system.

...to upgrade a system.

[2]

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(b) Four from:

Program coding/listing/piece of code
 Name of program language
 System flowchart
 Program flowchart/algorithm/pseudocode/DFD
 List of variables
 File structure
 Purpose of the program
 Purpose of the system
 Input format or example
 Output format or example
 Hardware requirements
 Software requirements
 Sample runs/test runs
 Limitations of the system
 Known bugs
 Validation routines

[4]

14 (a) Smishing

One from:

Never text back to unknown sender
 Never respond to any of these types of texts
 Never click on any links within the text message
 Never give out personal information in a text
 Don't allow your mobile phone number to be included in call lists
 Blocking unfamiliar texters/numbers

[1]

Pharming:

One from:

Use up to date anti-virus/anti-pharming/anti-spyware software
 Check address bar for strange web addresses
 Keeping DNS servers patched and up to date
 Use up to date firewall services on DNS servers

[1]

(b) One from:

A small text file sent/downloaded to a user's web browser when they visit a web site

[1]

Two from:

Store information about the visit and are used the next time the user visits the site
 Remember the user's details
 Remember the user's preferences
 Remember items a user bought
 Remember passwords
 Remember what they searched for
 Target products
 Offers a tailored experience for users

[2]

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15 Four from:

Blog is website/Wiki is software or a website.
 Blog is a personal journal or someone's opinion/A wiki is usually objective.
 Blog has a single author/A wiki has many authors.
 Blog is based on the author's personal observations.
 Both use links to websites.
 Blogs are written in reverse date order/Wiki has a structure determined by content and users.
 Only an author can edit a blog or readers can only add comments to a blog/A wiki can be edited by any member of the group.

[4]

16 (a) Two from:

Internal restricted access network/secure network
 Uses same protocols as the internet
 Private network
 Used within an organisation eg school
 Limited resources

[2]

(b) Two from:

Public network/not policed
 International network of networks
 WAN/wide area network
 World wide/global/international
 Public information system
 web/email/gophers/social networking/video conferencing is part of the internet

[2]

17 To be marked as a level of response:**Level 3 (7–8 marks):**

Candidates will address both the similarities and the differences between cheques and debit cards and discuss/consider different benefits/drawbacks.

The issues raised will be justified. There will be a reasoned conclusion. The information will be relevant, clear, organised and presented in a structured and coherent format.

Level 2 (4–6 marks):

Candidates will address both the similarities and the differences between cheques and debit cards and discuss/consider different benefits/drawbacks although development of some of the points will be limited to one side of the argument.

There may be a conclusion. For the most part the information will be relevant and presented in a structured and coherent format.

Level 1 (1–3 marks):

Candidates may only address one side of the argument, and give basic benefits and drawbacks. Answers may be simplistic with little or no relevance.

Level 0 (0 marks)

Response with no valid content

[8]