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

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

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]

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]

(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

(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]

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)

Field Name	***Validation Check***
Animal_ID	Format check/Presence check
Name_of_animal	Presence check/type check/character check
Animal_endangered?	Character check/type check
Years_on_register	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]

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]

(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]

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]