



---

**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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.

- 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

	<b>input</b> (✓)	<b>output</b> (✓)	<b>backing storage</b> (✓)
Motor		✓	
CD-R			✓
Webcam	✓		
Printer		✓	

[4]

4

	<b>true (✓)</b>	<b>false (✓)</b>
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>Page 5</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0417</b>	<b>12</b>

(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)**

<b>Field Name</b>	<b>Validation Check</b>
<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]

Page 7	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2016	0417	12

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]

Page 8	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2016	0417	12

(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]



<b>Page 9</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0417</b>	<b>12</b>

**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]