



6 (a) virus

any **two** from:

- program/software that replicates/copies itself
- can delete or alter files/data stored on a computer
- can make the computer “crash”/run slow

pharming

any **two** from:

- malicious code/software installed on a user’s hard drive/actual web server
- this code redirects user to a fake website (without their knowledge)
- to obtain personal/financial information/data

phishing

any **two** from:

- legitimate-looking emails sent to a user
- as soon as recipient opens/clicks on link in the email/attachment ...
- ... the user is directed to a fake website (without their knowledge)
- To obtain personal/financial information/data

[6]

(b) (i) Any **two** from:

- spyware/key logging software can only pick up key presses
- using mouse/touchscreen means no key presses to log
- the numbers on the key pad are in random/non-standard format, which makes it more difficult to interpret

[2]



(ii) 1 mark for name and 1 mark for description

any **one** from:

chip and PIN reader

- only the user and the bank know which codes can be generated

request user name

- additional security together with password/PIN

anti-virus

- removes/warns of a potential virus threat which can't be passed on to customers

firewall

- (helps) to protect bank computers from virus threats and hacking

encryption

- protects customer data by making any hacked information unreadable

security protocol

- governs the secure transmission of data

Biometric

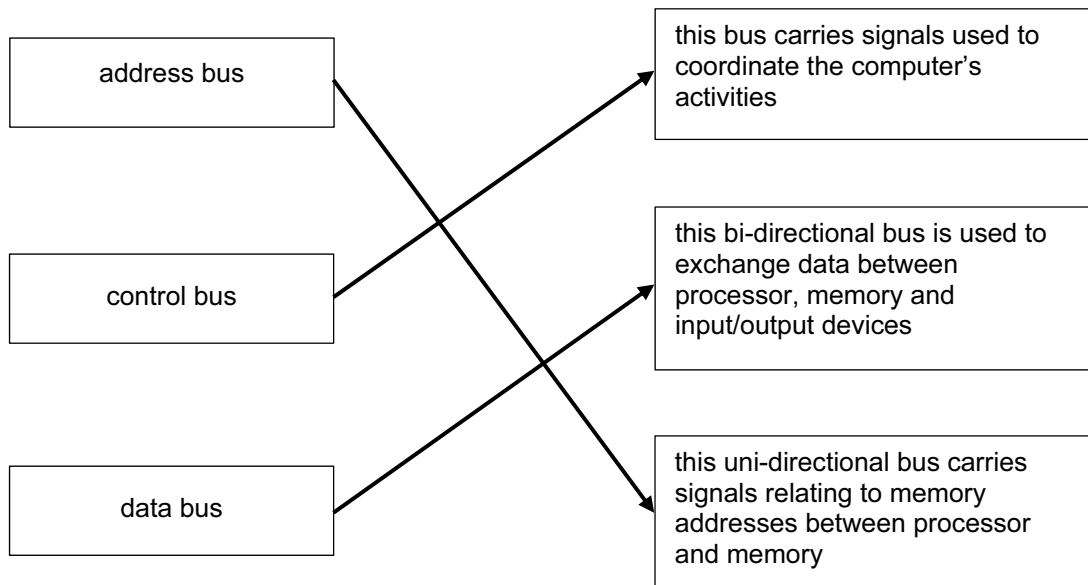
- to recognise user through the use of, e.g. facial/retina/finger print

Alerts

- users IP/MAC address is registered and user is alerted through, e.g. SMS if account is accessed through an unregistered address

[2]

7 (a)



2/3 matches – 2 marks

1 match – 1 mark

[2]

QUESTION 2.

Mark Scheme
Cambridge IGCSE – May/June 2015

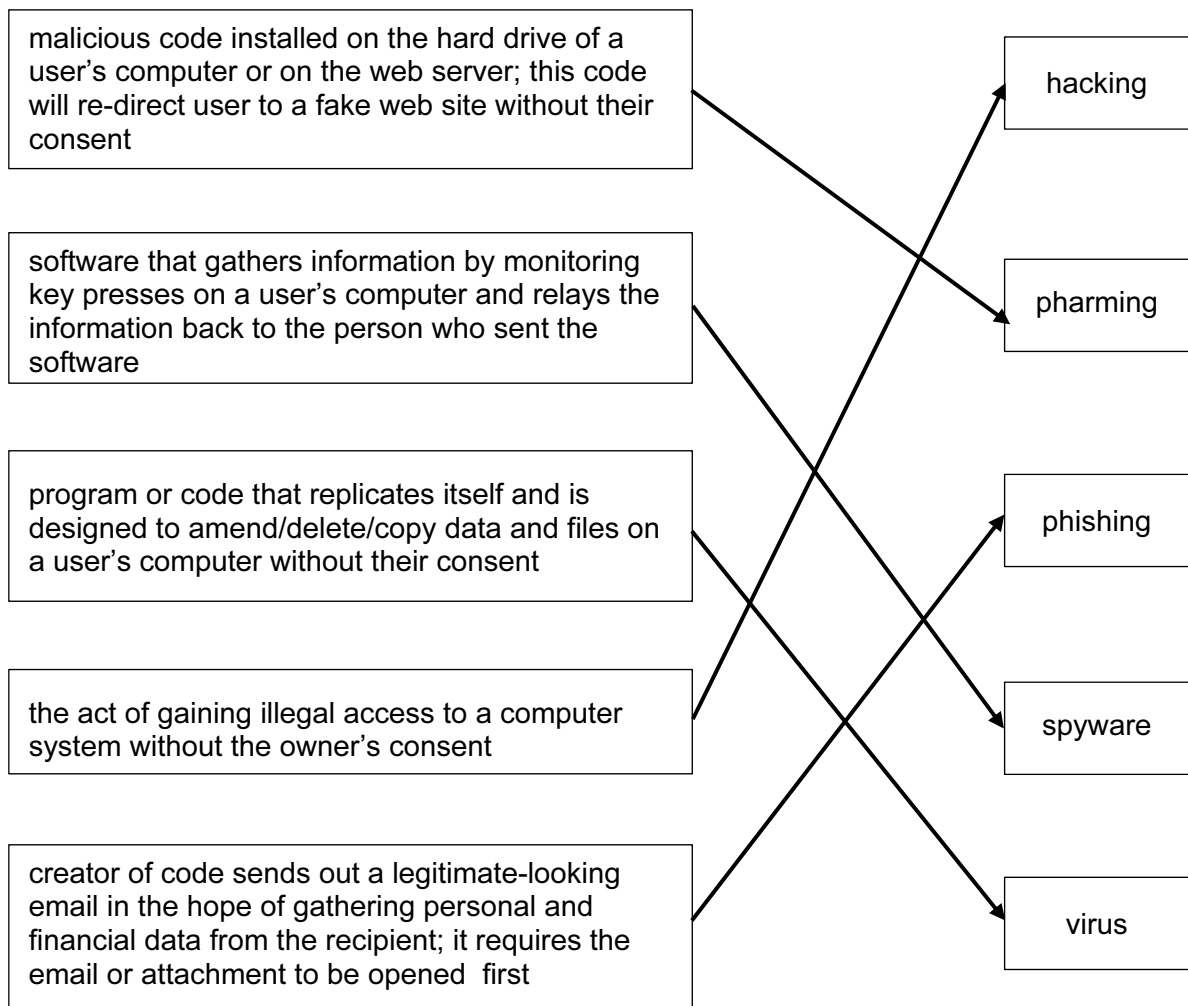


1 (a) 1 mark per correctly placed tick

Statement	True	False
they are a form of spyware		✓
they are used in advertising only		✓
they are used to track the browsing of a user	✓	
they act in the same way as a virus		✓

[4]

(b)



4/5 matches – 4 marks
3 matches – 3 marks
2 matches – 2 marks
1 match – 1 mark

[4]



- 2 (i) Either of the three options, **resistive**, **capacitive** or **infra-red** must be chosen maximum of **two** marks from chosen technology:

resistive

- uses multiple layers of material ...
- ... that transmit electric currents
- when the top layer/screen is pushed/touched into the lower/bottom layer ...
- ... the electric current changes and location of “touch” is found

capacitive

- current sent/flows out from all 4 corners of the screen
- when finger/stylus touches screen, the current changes
- the location of “touch” is calculated

infra-red

- an “invisible” grid on the screen (pattern of infra-red LED beams)
- sensors detect where the screen has been touched through a break in an infrared beam(s)
- the position where the screen touched is calculated

[2]

- (ii) 1 mark for **benefit**, 1 mark for **drawback**

Resistive

benefits:

- inexpensive/cheap to manufacture
- can use stylus/finger/gloved finger/pen

drawbacks:

- poor visibility in sunlight
- vulnerable to scratching
- wears through time
- does not allow multi-touch facility

capacitive

benefits:

- good visibility in sunlight
- (very) durable surface
- allows multi-touch facility

drawbacks:

- screen (glass) will shatter/break/crack (on impact)
- cannot use when wearing (standard) gloves

infra-red

benefits:

- good durability
- allows multi-touch facility
- can use stylus/finger/gloved finger/pen

drawbacks:

- expensive to manufacture
- screen (glass) will shatter/break/crack (on impact)
- sensitive to dust/dirt

[2]

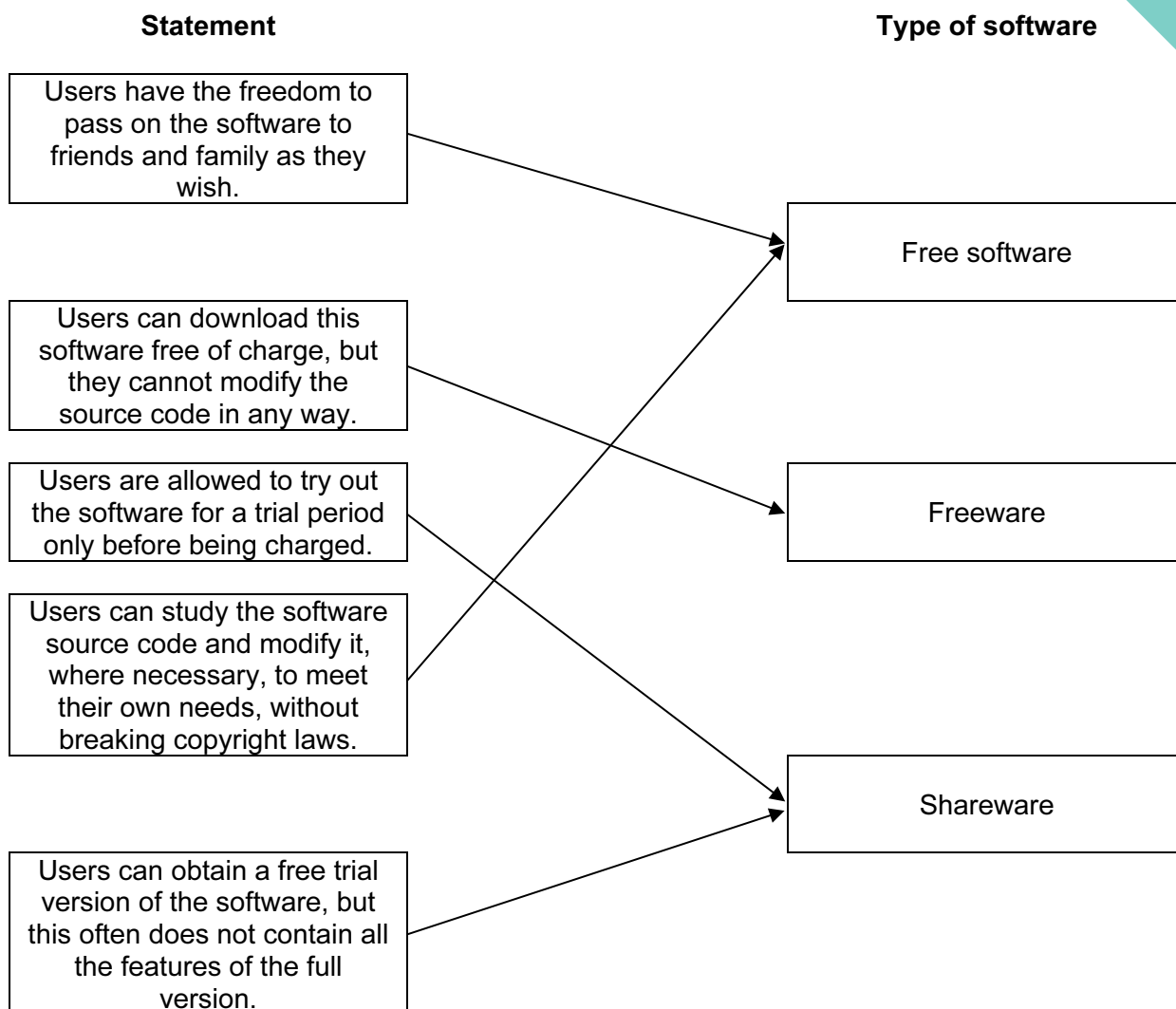
QUESTION 3.

Mark Scheme
Cambridge IGCSE – May/June 2016



8 (a) 1 mark for correct lines from each type of software

NOTE: all statements that are correct must be connected to the correct type of software for the mark to be awarded



[3]



(b) Any **three** from:

- That we should follow Copyright laws/intellectual property rights/work should not be stolen/plagiarised
- That we should follow Data Protection laws
- That we should not create or distribute malware//description of malware
- That we should not hack/crack other computers//description of hacking
- That we should protect our own computers against malware/hacking
- That we should consider privacy issues (when using social networking)
- That we consider anonymity issues (when using social networking)
- That we should consider environmental impacts when using computers
- Loss/creation of jobs from use of computers/robotics
- We should follow codes of practice (for creation of code e.g. ACM/IEEE)

[3]

(c) 2 marks for each term described

Viruses:

- program/software/file that replicates (copies) itself
- intends to delete or corrupt files//fill up hard disk space

Pharming:

- malicious code stored on a computer/web server
- redirects user to fake website to steal user data

Spyware:

- monitors and relays user activity e.g. key presses//key logging software
- user activity/key presses can be analysed to find sensitive data e.g. passwords

[6]

(d) Any **three** from:

- examines/monitors traffic to and from a user's computer and a network/Internet
- checks whether incoming and outgoing traffic meets a given set of criteria/rules
- firewall blocks/filters traffic that doesn't meet the criteria/rules
- logs all incoming and outgoing traffic
- can prevent viruses or hackers gaining access
- blocks/filters access to specified IP addresses/websites
- warns users of attempts by software (in their computer) trying to access external data sources (e.g. updating of software) etc. // warns of attempted unauthorised access to the system

[3]



9 (a)

Binary number A:

1	1	1	0	0	1	0
---	---	---	---	---	---	---

Binary number B:

1	0	0	1	1	1	0
---	---	---	---	---	---	---

[2]

(b)

Parity Bit

Binary number A

1

Binary number B

1

[2]

10 1 mark for each correct storage device

ROM (not EPROM/PROM)
Blu-ray disc
RAM
DVD/ DVD-R(+R)/ DVD-RW(+RW)/ DVD-ROM (not CD or DVD-RAM)
SSD/example of a USB <u>storage device</u>
DVD-RAM

[6]

11 1 mark for each correct point

- Presentation is used to format colour/style
- Structure is used to create layout
- In a HTML document structure and presentation are often kept separate
- By keeping the presentation separate it is easier to update colour/font
- Presentation is often stored in a file called a CSS ...
- ... the CSS is then linked to the HTML document to implement the presentation requirements
- (Mark-up) tags are used to define the structure of the document ...
- ... presentation and formatting can also be included within the tags

[4]

QUESTION 4.

0478/12

Question	Answer	Marks
9(b)	Any two from: – CD (drive) – DVD (drive) – Blu-ray (drive)	2

Question	Answer	Marks
10(a)	One mark for similarity, two marks for differences Similarity: – Both are designed to steal personal data – They both pose as a real company/person Differences: – Pharming uses malicious code installed on hard drive – Phishing is in form of an email – Phishing requires use to follow a link / open an attachment	3
10(b)	– Virus – Malware	2
10(c)(i)	– Incorrect	1
10(c)(ii)	Any four from: – Can help prevent hacking – Can monitor incoming and outgoing traffic – Can set criteria / rules are set for traffic – Can check whether traffic meets / defies criteria rules – Can rejects any traffic that does not meet / defies criteria	4

QUESTION 5.

0478/13

Question	Answer	Marks
2(b)	– Input – Black – White – Sensors – Binary One mark for each correct term in the correct place	5

Question	Answer	Marks
3(a)	Any three from: – Sends request to webserver – Receives web pages back from webserver – Converts HTML to display web page – Manages protocols	3
3(b)	Any three from: – Many requests are sent from a computer – Requests are sent to the <u>webserver</u> – The webserver becomes flooded with traffic – The webserver cannot handle the requests / fails – The website can no longer be accessed – Attack maybe distributed	3

Question	Answer	Marks
4	– Serial (ignore any ref to simplex etc.) – IP (address) – Browser – MAC (address)	4

QUESTION 6.

Mark Scheme

Cambridge IGCSE – October/November 2016



8

Statement	TRUE or FALSE
MIDI stores the actual music notes in a compressed format	FALSE
JPEG files are examples of lossless file compression	FALSE
MP3 files are, on average, 90% smaller than the music files stored on a CD	TRUE
MP4 files are examples of lossy file compression	TRUE

[4]

9 (a) Any **two** from:

- a large number of requests are sent to the network/server all at once
- designed to flood a network/server with useless traffic/requests
- the network/server will come to a halt/stop trying to deal with all the traffic/requests
- prevents users from gaining access to a website/server

[2]

(b) 1 mark for each security threat and 1 mark for matching description

Security threat	Description
Viruses	– software that replicates – causes loss/corruption of data // computer may “crash”/run slow
Hacking/cracking	– illegal/ unauthorised access to a system/data
Phishing	– a <u>link/attachment</u> sends user to fake website (where personal data may be obtained)
Pharming	– malicious code installed on user’s hard drive / computer – user is <u>redirected</u> to a fake website (where personal data may be obtained)
Spyware/key logger	– send/relay key strokes to a third party

[4]



10 (a) Any **three** from:

- hyper text mark-up language
- uses both structure and presentation
- web-authoring language/software // used to create websites/webpages
- uses tags to define e.g. colour / font / graphics / layout

[3]

(b)

File name: ComputerSciencePapers

Protocol: http(://)

Web server name: www.cie.org.uk

[3]

11 (a) 1 mark per nibble

0010 1010 1111

[3]

(b) 1 mark for identification of each sensor, max 2 for each description

Infrared/motion sensor

- Receives infrared rays/heat
- Sends data to microprocessor
- Receives microwaves
- Placed in the corner of a room, across a doorway
- Used to detect the heat of an intruder // used to detect if an infrared beam has been broken by an intruder

Pressure sensor

- Receives current if circuit created // stops receiving current if circuit is broken
- Sends data to microprocessor
- Placed on a window/door, at the entrance
- Used to detect a change in pressure

[6]

QUESTION 7.

0478/11

Question	Answer	Marks
4(a)	Four from: Phishing: • A legitimate looking email is sent to a user • The email will encourage the user to click a link/open an attachment • The link will redirect a user to a legitimate looking webpage (to steal personal data) Pharming: • A malicious code is installed on a user's hard drive/server • The code will cause a redirection to a legitimate looking webpage (to steal personal data)	4
4(b)	Two from: • Hacking • Cracking • Virus • Denial of service • Malware • Spyware	2
4(c)	Two from: • Firewall • Proxy server • Anti-virus • Anti-malware • Anti-spyware • Username and password	2

Question	Answer				Marks				
5(a)	1 mark for the correct tick for each storage				5				
						Storage device or media	Primary (✓)	Secondary (✓)	Off-line (✓)
						External HDD			✓
						RAM	✓		
						Internal SSD		✓	
						ROM	✓		
						DVD			✓
5(b)	Four from: • The disc is rotated/spun • Laser beam is used • The laser beam makes indentations on the surface of the disc/pits and lands • The data is written in a spiral/concentric tracks • The pits and lands represent binary values/1s and 0s • It is called burning data to the disc				4				
5(c)(i)	Solid state				1				
5(c)(ii)	Two from: • It has no moving parts so will be durable • It is small/compact so it can be easily fit onto the device • It is light so it will not be difficult to lift for the drone • It can hold the large amount of data needed for the video/film footage • Uses less power so drone battery will last longer				2				