



YEAR: MAY/JUNE 2015

Choose **six** correct terms from the following list to complete the spaces in the paragraphs below:

- encryption
- file name
- firewall
- HTML tags/text
- IP address
- protocol
- proxy server
- SSL certificate
- web server name



A user enters a URL. The web browser breaks up the URL into **three** components:

- 1
- 2
- 3

The web server returns the selected web page.

The web browser reads the from the selected page and shows the correctly formatted page on the user's screen.

A is used between the user's computer and the network to examine the data traffic to make sure it meets certain criteria.

To speed up the access to the web pages next time, a is used between the computer and web server; this device uses a cache to store the website home page after it has been accessed for the first time.

[6]

Viruses, pharming and phishing are all examples of potential Internet security issues.

Explain what is meant by each of these **three** terms.

Virus

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Pharming

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.....



Phishing

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.....

[6]

An online bank requires a client to supply an 8-digit code each time they wish to access their account on the bank's website.

Rather than ask the client to use a keyboard, they are requested to use an on-screen keypad (shown on the right) to input the 8-digit code.

2	5	1
6	8	3
9	0	4
	7	

The position of the digits on the keypad can change each time the website is visited.

The client uses a mouse or touch screen to select each of the 8 digits.

(i) Explain why the bank has chosen to use this method of entering the 8 digits.

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[2]



Four statements about cookies are shown in the table below.

Study each statement.

Tick (✓) to show whether the statement is true or false.

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

Name and describe **another** measure that the bank could introduce to improve the security of their website.

Name

Description

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.....
.....
.....



[2]

Five descriptions and five security issues are shown below.

Draw a line to connect each description to the correct security issue.

Description

malicious code installed on the hard drive of a user's computer or on the web server; this code will re-direct user to a fake web site without their consent

software that gathers information by monitoring key presses on a user's computer and relays the information back to the person who sent the software

program or code that replicates itself and is designed to amend, delete or copy data and files on a user's computer without their consent

the act of gaining illegal access to a computer system without the owner's consent

creator of code sends out a legitimate-looking email in the hope of gathering personal and financial data; it requires the recipient to follow a link in the email or open an attachment

Security issue

hacking

pharming

phishing

spyware

virus



[4]



(a) State what is meant by the term SSL.

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..... [1]

(b) The following stages take place when a user wishes to access a secure website.

Put each stage in sequence by writing the numbers 1 to 6 in the column on the right. The first one has been done for you.

Stage	Sequence number
the encrypted data is then shared securely between the web browser and the web server	
the web browser attempts to connect to a website which is secured by SSL	1
the web server sends the web browser a copy of its SSL certificate	
the web browser requests the web server to identify itself	
the web server will then send back some form of acknowledgement to allow the SSL encrypted session to begin	
the web browser checks whether the SSL certificate is trustworthy; if it is, then the web browser sends a message back to the web server	

[5]

Five computing terms are described below.

Write the name of the term being described.

Software that anyone can download for free from the Internet and then use without having to pay any fees. The usual copyright laws apply and a user license is important.

.....

Software that gives the user the chance to try it out free of charge before actually buying it. The software is subject to the usual copyright laws. As a rule, not all the features found in the full version are available at this stage.

.....

Software where users have freedom to run, copy, change and adapt it. This is an issue of liberty and not of price since the software guarantees freedom and the right to study and modify the software by having access to the actual source code.

.....

Secure socket layer (SSL) is used in the security of information on Internet websites.

(a) State how it is possible for a user to know that a website is secure by looking at the web address.

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..... [1]



Describe **three** of the stages a web browser goes through to detect whether a website is secure.

1

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2

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3

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[3]

YEAR: MAY/JUNE 2016

A bank offers an online service to its customers. The bank has developed a "SafeToUse" system that asks each customer to enter four randomly chosen characters from their password each time they log in.

The customer selects these four characters from drop-down boxes. For example:

Please select the

2nd character ▼

5th character ▼

6th character ▼

8th character ▼

(a) (i) Explain why it is more secure to use drop-down boxes rather than entering characters using a keyboard.

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..... [2]

(ii) Give a reason why the system asks for four characters chosen at random.

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..... [1]

(b) Biometrics is an additional form of security.

Give two examples of biometrics.

1

2

[2]



YEAR: MAY/JUNE 2016

Six security issues and six descriptions are shown below.

Draw a line to link each security issue to its correct description.

Security issue	Description
Pharming	illegal access to a computer system without the owner's consent or knowledge
Phishing	software that gathers information by monitoring key presses on a user's keyboard; the data is sent back to the originator of the software
Viruses	malicious code installed on the hard drive of a user's computer or on a web server; this code will re-redirect the user to a fake website without the user's knowledge
Hacking	creator of code sends out a legitimate-looking email in the hope of gathering personal and financial information from the recipient; it requires the user to click on the link in the email or attachment
Spyware	a message given to a web browser by a web server; it is stored in a text file; the message is then sent back to the server each time the browser requests a page from the server
Cookies	program or code that replicates itself; designed to amend, delete or copy data or files on a user's computer; often causes the computer to crash or run slowly



YEAR: MAY/JUNE 2016

(a) **Five** statements and **three** types of software are shown below.

Draw lines to connect each statement with the correct type of software.

Statement	Type of software
Users have the freedom to pass on the software to friends and family as they wish.	Free software
Users can download this software free of charge, but they cannot modify the source code in any way.	Freeware
Users are allowed to try out the software for a trial period only before being charged.	Shareware
Users can study the software source code and modify it, where necessary, to meet their own needs, without breaking copyright laws.	
Users can obtain a free trial version of the software, but this often does not contain all the features of the full version.	

YEAR: MAY/JUNE 2016

Describe **three** ethical issues that should be considered when using computers.

1

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2

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3

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[3]

Security of data is very important.

Three security issues are viruses, pharming and spyware.

Explain what is meant by each issue.

Viruses:

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Pharming:

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Spyware:

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.....

[6]

YEAR: MAY/JUNE 2016

Describe **three** tasks carried out by a firewall.

1

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2

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3

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[3]



YEAR: MAY/JUNE 2016

Explain what is meant by a denial of service attack.

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[2]



Name and describe **two other** potential security threats when using the Internet.

Security threat 1

Description

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Security threat 2

Description

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.....

[4]

Malicious code installed on a user's hard drive or a web server which redirects the user to a fake website without their knowledge

.....

[5]

YEAR: OCT/NOV 2016

The Henslows Diner stores personal data on a computer. This computer is connected to the Internet to allow the data to be backed up.

There is currently one security method in place to protect the data on the computer from unauthorised access. This is a password.

Give **two** other security methods that could be added to improve the security of the data. Describe how each method will keep the data safe.

Security method 1

Description

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Security method 2

Description

.....

.....

[4]

When sending this data, security is very important. Data are sent over the Internet using Transport Layer Security (TLS) protocol.

Name the **two** layers that make up TLS.

1

2

[2]



A simple symmetric encryption system is used to encrypt messages. Each letter of the alphabet is substituted by another letter.

Plain text

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Cypher text

v	p	n	a	q	b	r	u	z	s	c	o	y	k	w	f	x	i	e	m	d	j	t	l	h	g
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

(a) Convert the following plain text to cypher text.

Plain text: **data security**

Cypher text:[2]

(b) A new cypher text is created by shifting each letter of the alphabet **five** places to the right.

Show the new cypher text below.

Plain text

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

New cypher text

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

[2]

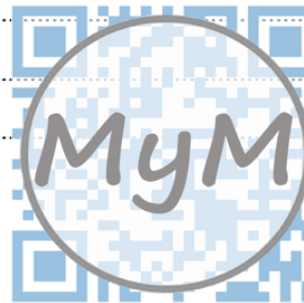
(c) State, giving a reason, which cypher text would be more secure.

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[2]

Passwords are used to keep data safe.

Explain the differences between a *text-based password* and a *biometric password*.

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..... [4]



YEAR: MAY/JUNE 2017

A company has a number of offices around the world.

- (a) Data is transmitted between the offices over the Internet. In order to keep the data safe the company is using Secure Socket Layer (SSL) protocol and a firewall at each office.

Explain how SSL protocol and a firewall will keep the company's data safe.

SSL protocol

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Firewall

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..... [4]



