1. Nov/2020/Paper_11/No.3

Transport Layer Security (TLS) protocol is used to secure the transmission of data over the Internet.

(a) Identify the **two** layers in the TLS protocol.

Layer 1 .....

Layer 2 .....

[2]

(b) The following paragraph explains how data is sent securely using the TLS protocol.

Use the terms to complete the paragraph. Not all terms may need to be used.

- authentic
- binary
- browser
- certificate
- internet service provider
- signal
- web page
- web server
- website

The browser requests the ..... to identify itself by providing its ..... . This is sent and a check is performed to see if it is ..... . If it is, the ..... sends a ..... back to the web server and data transmission begins.

[5]

(c) Identify **one** other protocol that can be used to secure data transmission over the Internet.

..... [1]

2. Nov/2020/Paper_11/No.5

Luke is creating a website for his t-shirt design business.

(a) He is using HTML to create the website. HTML can be separated into structure and presentation.

(i) Give **two** examples of HTML structure.

Example 1 .....

Example 2 .....

[2]

(ii) Give **two** examples of HTML presentation.

Example 1 .....

Example 2 .....

[2]

(b) Luke is concerned that his web server may be hacked or subjected to a denial of service (DoS) attack.

State **two** security methods that Luke could use to help protect the web server from hacking or a DoS attack.

Method 1 .....

Method 2 .....

[2]

3. Nov/2020/Paper_12/No.1a,d,e

Tina is creating a website for charity events. She uses HTML to create the website.

(a) State what is meant by HTML.

.....

..... [1]

(b) She uses the hexadecimal colour code #43B7F0 as the background colour for her website.

(i) State whether background colour is an example of **structure** or **presentation**, in the website.

..... [1]

(ii) The hexadecimal colour code **#43B7F0** is stored in three **8-bit** registers.

Give the **8-bit binary** values for each part of the hexadecimal code.

43								
B7								
F0								

[6]

(c) Tina uses a microphone to record a welcome message for her website.

(i) State whether the microphone is an **input** or **output** device.

..... [1]

(ii) She wants to compress the recording to make sure that the file is as small as possible for the website.

Identify which type of compression she should use and describe how this would compress the file for the website.

Type of compression .....

Description

.....

.....

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..... [4]

(iii) Give **two** benefits of compressing the file for the website.

Benefit 1 .....

.....

Benefit 2 .....

.....

[2]

(d) Tina will use the TLS protocol in her website when selling tickets to people for different charity events. This makes sure that their personal data is transmitted securely.

(i) Identify the **two** layers that are present in the TLS protocol.

Layer 1 .....

Layer 2 .....

[2]

(ii) Explain how data is sent securely using the TLS protocol.

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..... [6]

(e) Tina is concerned about security threats to her web server.

(i) Identify **three** security threats to her web server that Tina might be concerned about.

1 .....

2 .....

3 .....

[3]

(ii) Tina installs a proxy server to help protect her website from security threats.

Describe how the proxy server will help protect the website.

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..... [4]

4. Nov/2020/Paper_12/No.3

Alessandro has some important data stored on his computer.

He is concerned about accidental damage to his data.

(a) (i) Identify **three** ways that the data could be accidentally damaged.

1 .....

2 .....

3 .....

[3]

(ii) State what Alessandro could do to make sure that he can retrieve his data if it is accidentally damaged.

..... [1]

(b) Alessandro uses an SSD to store his data.

Describe what is meant by an SSD and how it operates to store data.

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..... [4]

(c) Alessandro also uses off-line storage to store his data.

Three examples of off-line storage are Blu-ray, CD and DVD.

Six statements are given about off-line storage.

Tick (✓) to show if each statement applies to **Blu-ray**, **CD**, or **DVD**.

Some statements apply to more than one example of off-line storage.

Statement	Blu-ray (✓)	CD (✓)	DVD (✓)
A type of optical storage			
Has the largest storage capacity			
Can be dual layer			
Read using a red laser			
Has the smallest storage capacity			
Stores data in a spiral track			

[6]

5. Nov/2020/Paper_12/No.5c

Tammy is buying a new computer that has an LED display.

(a) **Five** statements about LED displays are given.

Tick (✓) to show if each statement is **True** or **False**.

Statement	True (✓)	False (✓)
It is a flat panel display		
It creates images using red, green and blue diodes		
It is not very energy efficient and gives off heat		
It can be used in mobile devices such as smartphones and tablets		
It is a front-lit display		

[5]

(b) Tammy connects the computer to her home network. The computer has a MAC address and an IP address.

A paragraph is given about MAC addresses and IP addresses.

Complete the paragraph using the list of terms given. Not all terms need to be used.

- compiled
- computer
- control
- dynamic
- identify
- packet
- principal
- protocol
- similar
- unique

A MAC address is a media access ..... address.

A network device has a ..... MAC address that can help ..... the device in the network. An IP address is an Internet ..... address. An IP address can be static or .....

[5]

(c) Tammy uses a browser when accessing the Internet.

Describe the role of the browser.

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..... [4]

6. Nov/2020/Paper_13/No.4a,b

Eugene has a web server that stores his online shopping website.

Customers access the website using a browser.

(a) Describe how the webpages are requested and displayed on the customer's computer.

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..... [4]

(b) State **three** online security threats to Eugene's web server.

Threat 1 .....

Threat 2 .....

Threat 3 .....

[3]

7. June/2021/Paper_13/No.6

Elsa writes a paragraph in an examination about encryption.

There are several terms missing from the paragraph.

Complete the paragraph using the list of given terms. Not all terms may need to be used.

Some terms may be used more than once.

- algorithm
- alphanumeric
- cookie
- cypher
- key
- padlock
- plain
- word processed

The data is encrypted using a ..... . This is an ..... that is used to scramble the data. The data before encryption is known as ..... text. When the data has been encrypted it is known as ..... text. To read the encrypted data it needs to be decrypted using a ..... .

[5]

8. Nov/2020/Paper_13/No.12

Warner says that he has a very good Internet Service Provider (ISP) that provides several services.

Five statements about ISPs are given.

Tick (✓) to show if each statement is **True** or **False**.

Statement	True (✓)	False (✓)
Provides access to the Internet for customers		
Can determine the maximum bandwidth available for customers		
Monitors the volume of data downloaded by customers		
Can provide an IP address for the customer		
Stores the content for all web pages available on the Internet		

[5]

9. Nov/2020/Paper_13/No.13

Phishing and pharming are two security issues a user should be aware of when using the Internet.

(a) State **one** similarity between phishing and pharming.

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..... [1]

(b) Explain **two** differences between phishing and pharming.

Difference 1 .....

.....

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Difference 2 .....

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..... [2]

10. Mar/2020/Paper_12/No.2d

A school network is used to transmit and store data about students.

(a) Different types and methods of transmission can be used to send data across the network.

Three descriptions about data transmission are given.

Tick (✓) **one Method** and tick (✓) **one Type** for each description.

Description	Method		Type		
	Serial (✓)	**Parallel (✓)**	**Simplex (✓)**	**Half-duplex (✓)**	**Duplex (✓)**
Data is sent down a single wire in a single direction only.					
Data is sent down multiple wires in both directions, at the same time.					
Data is sent down a single wire in both directions, but never at the same time.					

[3]

(b) Parity bits are used to help detect errors in data transmission. A parity bit is added to each binary value before transmission.

Three binary values are to be transmitted using **even** parity.

(i) Complete the parity bit that would be added to each binary value for even parity.

Binary value							Parity bit
1	1	0	0	1	1	1	
1	0	1	0	1	0	1	
0	1	1	0	1	0	0	

[3]

(ii) A number of errors occurred during data transmission.

State why a parity check may **not** detect transmission errors.

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..... [1]

(c) Data is encrypted using 128-bit symmetric encryption before it is transmitted.

(i) Explain what is meant by encryption.

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..... [2]

(ii) State how the strength of the encryption can be improved.

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..... [1]

(d) Describe how the school could prevent the loss of stored data.

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..... [6]

11. Mar/2020/Paper_12/No.8

A student website provides research support and software downloads.

(a) Students use a browser to access the web pages. Explain the role of a browser in this process.

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..... [5]

(b) The website owners are worried about a denial of service (DoS) attack.

Explain the term denial of service attack.

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..... [3]

(c) The website owners are also concerned about the ethical issues of copyright and plagiarism.

(i) State what is meant by the term copyright.

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..... [1]

(ii) State what is meant by the term plagiarism.

.....

..... [1]

12. June/2020/Paper_11/No.7

Hans has a website selling comic books. Customers can create an account to buy the comic books.

Customers enter a username and password to log in to their account.

(a) Customers may worry about keylogging software being used to gain unauthorised access to their account.

(i) Describe how keylogging software can be used to gain unauthorised access to a customer's account.

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..... [4]

(ii) Identify a feature that Hans can add to the website to limit the threat of keylogging software.

..... [1]

(b) Hans makes sure data transmission for his website is secure.

(i) State how customers can check that the personal details they enter into the website will be transmitted securely.

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..... [1]

(ii) Explain how a customer's browser checks that the website is secure.

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..... [4]

13. June/2020/Paper_12/No.3

A company collects and stores data about its customers. The data is stored on a server in the company's office.

The data is transmitted to cloud storage to create a back-up.

The data is encrypted using symmetric encryption before it is sent to the cloud storage.

(a) Describe how the data is encrypted.

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..... [4]

(b) Give **three other** methods that can be used to secure the data in the office.

Method 1 .....

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Method 2 .....

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Method 3 .....

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[3]

14. June/2020/Paper_12/No.5

Meena uses a browser to research information for her business.

(a) Give **three** functions of a browser.

1 .....

2 .....

3 .....

[3]

(b) Meena buys products for her business using the Internet.

The Transport Layer Security (TLS) protocol is used for transferring data when she buys products.

One layer of the TLS protocol is the handshake layer.

(i) Describe the purpose of the handshake layer.

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..... [2]

(ii) Identify the other layer of the TLS protocol.

..... [1]

(iii) Identify another protocol that can be used to transfer data securely.

..... [1]

(c) Meena visits a website to buy products for her business.

The browser uses a small file to store the details of the products she views. This allows the website to display advertisements for other products she may like.

The small file also stores her log-in details.

Give the name of this type of file.

..... [1]

15. June/2020/Paper_12/No.10

Uma is concerned about risks that she may encounter when using the Internet.

Two of the risks she is concerned about are phishing and pharming.

(a) Give **one** similarity and **two** differences between phishing and pharming.

Similarity .....

.....

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Difference 1 .....

.....

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Difference 2 .....

.....

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[3]

(b) Identify **two** other risks that Uma could encounter when using the Internet.

Risk 1 .....

Risk 2 .....

[2]

16. June/2020/Paper_13/No.3

Thomas has an online business that sells homemade furniture. He has a web server that hosts his website for his business.

(a) Describe the role of a web browser in requesting and displaying the web pages for the website.

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..... [3]

(b) Thomas is worried about a denial of service (DoS) attack on his web server.

Describe what happens in a denial of service attack.

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..... [3]

17. June/2020/Paper_13/No.7

Edie uses a firewall to help prevent her children from accessing websites that she does not want them to see.

(a) Describe how the firewall helps prevent her children from accessing these websites.

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..... [4]

(b) Edie is concerned that her children may download a virus when accessing websites.

State what is meant by a **virus** and explain what could happen if a virus was downloaded.

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..... [3]

(c) Edie explains to her children how to identify if a website is secure.

(i) Give **two** ways that her children can identify if a website is secure.

1 .....

2 .....

[2]

(ii) Describe how a browser checks that a website is secure.

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..... [4]

18. June/2020/Paper_13/No.10

Clive has a laptop computer that he uses for his business. He enters a username and password to log in to his laptop.

Clive is worried about spyware being used to find out his username and password.

(a) Describe how spyware could be used to find out Clive's username and password.

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..... [4]

(b) The threat of spyware makes Clive concerned about typing a password to log in to his laptop.

Give an example of how Clive could log in securely without typing a password.

..... [1]