



**Fundamentals of computer
networks**

Name: _____

Class: _____

Date: _____

Time: **97 minutes**

Marks: **91 marks**

Comments:

Q1.

Most schools have a computer network.

Some schools allow teachers to access the school network from their home computers.

Give **one** reason why some schools allow this and **one** reason why some schools do not allow this.

Reason for: _____

Reason against: _____

(Total 2 marks)

Q2.

State **three** advantages of using a computer network.

(Total 3 marks)

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Q3.

PANs and LANs are two different types of network.

(a) Describe **one** difference between a PAN and a LAN.

(1)

(b) Give **one** example of where a PAN could be used.

(1)

(Total 2 marks)

Q4.

When two computers on a network communicate with each other they need to use the same protocol.

Define the term network protocol.

(Total 2 marks)

Q5.

For questions (a) to (c) shade **one** lozenge to indicate the most suitable protocol to use in the situation described.

(a) Used to retrieve email stored on a server.

- | | |
|----------------|-----------------------|
| A HTTP | ☐ |
| B HTTPS | ☐ |
| C FTP | ☐ |
| D SMTP | ☐ |
| E IMAP | ☐ |

(1)

(b) Used to make a payment securely when purchasing goods from a website.

- | | |
|----------------|-----------------------|
| A HTTP | ☐ |
| B HTTPS | ☐ |
| C FTP | ☐ |
| D SMTP | ☐ |
| E IMAP | ☐ |

(1)

(c) Used to send an email from a client machine to an email server.

- | | |
|----------------|-----------------------|
| A HTTP | ☐ |
| B HTTPS | ☐ |
| C FTP | ☐ |

D SMTP

☐

E IMAP

☐

(1)
(Total 3 marks)

Q6.

TCP/IP is a protocol used in networking. There are 4 layers in the TCP/IP stack.

Complete the table by placing the four layers of the TCP/IP stack into order (1-4) where 1 is the top layer and 4 is the bottom layer.

Layer	Order (1-4)
Transport	
Link	
Internet	
Application	

(Total 3 marks)

Q7.

A games café is evaluating the security for their network.

- (a) State **two** reasons why using a biometric authentication measure is better than password authentication for staff accounts.

(2)

- (b) Explain why it would not be appropriate for the café to use MAC address filtering on their wireless network.

(2)
(Total 4 marks)

Q8.

Explain **two** differences between a LAN and a WAN.

Difference 1: _____

Difference 2: _____

(Total 4 marks)

Q9.

HTTP and HTTPS are two application layer protocols.

Explain why HTTPS is often used rather than HTTP.

(Total 1 mark)

Q10.

The application layer and the network (internet) layer are two of the layers within the TCP/IP stack.

What are the names of the other **two** TCP/IP stack layers?

1. _____

2. _____

(Total 2 marks)

Q11.

What is the purpose of the network (internet) layer within the TCP/IP stack?

(Total 2 marks)

Q12.

Explain how MAC address filtering works.

(Total 2 marks)

Q13.

List **three** different measures that can be used to maintain the security of a computer system.

For each measure:

- Outline what the measure is.
- Explain what types of threat to cyber security it is effective against.

(Total 9 marks)

Q14.

Most schools have a computer network.

Some schools allow teachers to access the school network from their home computers.

Give **one** reason why some schools allow this and **one** reason why some schools do not allow this.

Reason for: _____

Reason against: _____

(Total 2 marks)

Q15.

PANs and LANs are two different types of network.

Describe **one** difference between a PAN and a LAN.

(Total 1 mark)

Q16.

Give **one** example of where a PAN could be used.

(Total 1 mark)

Q17.

“Schools should use a wireless network instead of a wired network”.

Discuss this statement.

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(Total 6 marks)

Q18.

When two computers on a network communicate with each other they need to use the

same protocol.

Define the term protocol.

(Total 2 marks)

Q19.

Shade **one** lozenge to indicate the most suitable protocol to use in the situation described.

(a) Used to retrieve email stored on a server.

- | | | |
|----------|-------|-----------------------|
| A | HTTP | ☐ |
| B | HTTPS | ☐ |
| C | FTP | ☐ |
| D | SMTP | ☐ |
| E | IMAP | ☐ |

(1)

(b) Used to make a payment securely when purchasing goods from a website.

- | | | |
|----------|-------|-----------------------|
| A | HTTP | ☐ |
| B | HTTPS | ☐ |
| C | FTP | ☐ |
| D | SMTP | ☐ |
| E | IMAP | ☐ |

(1)

(c) Used to send an email from a client machine to an email server.

- | | | |
|----------|-------|-----------------------|
| A | HTTP | ☐ |
| B | HTTPS | ☐ |
| C | FTP | ☐ |
| D | SMTP | ☐ |
| E | IMAP | ☐ |

Q20.

TCP / IP is a protocol stack used in networking. There are four layers in the TCP / IP stack.

Complete the table by placing the four layers of the TCP / IP stack into order (1 – 4), where 1 is the top layer and 4 is the bottom layer).

Layer	Order (1-4)
Transport	
Link	
Internet	
Application	

(Total 3 marks)

Q21.

Define the term network.



EXAM PAPERS PRACTICE (Total 2 marks)

Q22.

Describe **three** advantages of using a computer network rather than standalone machines.

(Total 3 marks)

Q23.

One disadvantage of using a computer network is that there are increased security risks. Describe **three** other disadvantages of using a computer network.

(Total 3 marks)

Q24.

Barnes Pest Control is a small business with four employees. Each of their employees has a standalone desktop computer. They have decided to use a network instead of standalone machines.

Two security measures that Barnes Pest Control could use are authentication and encryption. Explain each of these security measures and how Barnes Pest Control could use them.

Authentication: _____

Encryption: _____

(Total 4 marks)

Q25.

Draw a diagram showing a four-computer network using a bus topology.



(Total 3 marks)

Q26.

Barnes Pest Control is a small business with four employees. Each of their employees has a standalone desktop computer. They have decided to use a network instead of standalone machines.

Barnes Pest Control decides to use a star network topology. State **two** reasons why this topology may **not** be the most suitable choice.

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(Total 2 marks)

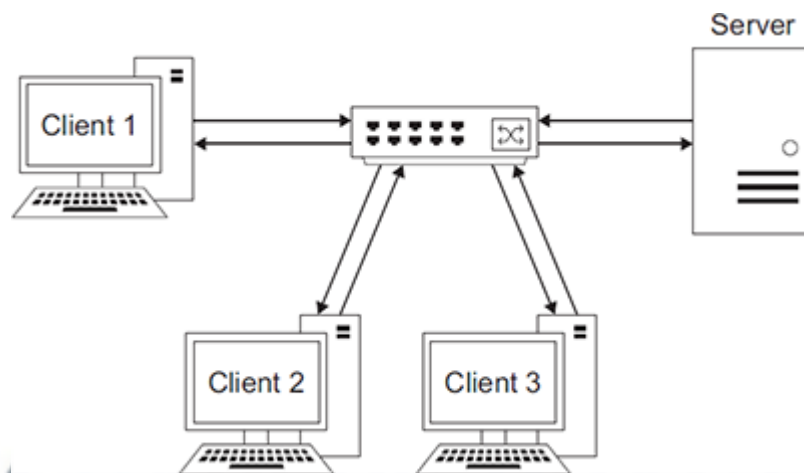
Q27.

The application layer and the internet layer are two of the layers in the four-layer TCP / IP model. Describe the roles of each of the four layers in the TCP / IP model. In your answer you should also state the names of the other two layers of the TCP / IP model.

(Total 6 marks)

Q28.

The diagram below shows a client–server network. The clients are connected to a switch.



- (a) What network topology is shown in the diagram above?

(1)

- (b) State **two** advantages of this particular topology.

1. _____

2. _____

(2)

(Total 3 marks)

Q29.

Discuss the advantages **and** disadvantages of connecting a computer to a network.

In this question you will be marked on your ability to use good English, to organise information clearly and to use specialist vocabulary where appropriate.

(Total 6 marks)

Q30.

What is a computer network?

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(Total 2 marks)