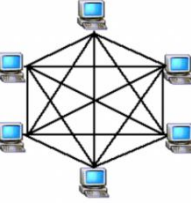|	
Star network	1- Where one or more central switch, hub or computer acts as a central conduit to transmit messages 2- High data _____ 3-
Name of topology_____	1- Cheap and easy to set up but can be slow under heavy traffic 2-
Name of topology_____	1- High transfer speeds 2- Can fail if 1 node fails
Name of topology_____	1- A large part of the network may be redundant. 2- 3-

Network hardware

	A _____ joins together two networks that use _____ base protocols
	A _____ joins together two networks that use _____ base protocols
Hub	
	Analyses each packet of data and sends it to the computer it was intended for.
	Stores the addresses of computers on the network and transfers data between devices.

Advantages of a network	Disadvantages of a network
1- Share hardware 2- Central backup 3-	1- Initial cost of devices can be expensive 2- 3-

| Circuit switching	Packet switching
1- This is susceptible to interception and failure 2- Line is _____ when in use 3-	1- If a route fails then the packet can use an alternate route. 2- 3- Data is _____ into packets that all traverse _____

Data packet			
Source address		BILLY	Checksum (error checking)
	_____	_____	

Layers	Protocols	Description of layer
Application layer	_____ HTTPS SMTP FTP	Generates data and requests _____
Transport layer	TCP	_____ with remote host
Network layer	_____	Transfers packets with IP address
Data link layer	Ethernet	Transfers packets with _____ address
Physical layer	■	

Email protocols	Description
	Mail servers use SMTP to _____ mail messages, mail applications typically use SMTP only for sending messages to a mail server.
POP3	Is a protocol for receiving email, in which email is received and stored by an email server with a client downloading messages when ready.
IMAP	transfers emails between computer systems via the internet. The IMAP protocol however is generally used for email _____ and _____ as an alternative to POP.

Other protocols	Description
HTTP	Allows web pages to be shared across different computers and _____
HTTPS	A more secure version of HTTP that uses SSL to transport and _____ data
	Transmission control protocol/ internet protocol – is the basic communication language or protocol of the Internet.
Wireless	2 standards _____ and _____
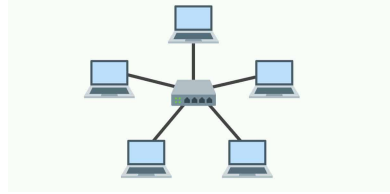
	1- Where one or more central switch, hub or computer acts as a central conduit to transmit messages 2- 3-
Star network	

	1- Cheap and easy to set up but can be slow under heavy traffic 2-
Name of topology_____	
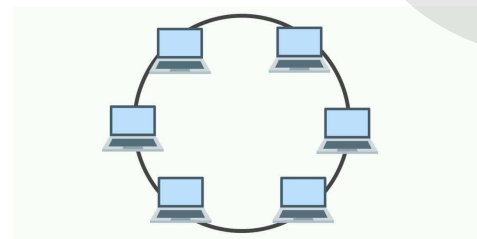
	1- 2-
'Token' Ring network	

	1- A large part of the network may be redundant. 2- Complex and _____ 3-
Name of topology_____	

Network hardware

Gateway	
Hub	
	Analyses each packet of data and sends it to the computer it was intended for.
	Stores the addresses of computers on the network and transfers data between devices.

Advantages of a network	Disadvantages of a network
1- Share hardware 2- Central backup 3-	1- Initial cost of devices can be expensive 2- 3-

Circuit switching	Packet switching
1- This is susceptible to interception and failure 2- 3-	1- If a route fails then the packet can use an alternate route. 2- 3- Data is _____ into packets that all traverse _____

Data packet

Source address		Information about how the packet will be _____			Checksum (error checking)

Layers	Protocols	Description of layer
Application layer	HTTP _____ SMTP FTP	Generates the data and requests _____
Transport layer	TCP	Establishes connection with _____
Network layer	IP	Transfers packets with _____ address
Data link layer	Ethernet	Transfers packets with _____ address
Physical layer	████████	

Email protocols	Description
	Mail servers use SMTP to _____ mail messages, mail applications typically use SMTP only for sending messages to a mail server.
POP3	Is a protocol for _____, in which email is received and stored by an email server with a client downloading messages when ready.
IMAP	

Other protocols	Description
HTTP	
HTTPS	A more secure version of HTTP that uses _____to transport and encrypt data
	Transmission control protocol/ internet protocol – is the basic communication language or protocol of the Internet.
Wi-Fi	2 standards _____ and _____

TCP/IP is a protocol used for communication between computers when transmitting data over networks.

(a)   Complete the diagram below, which shows the typical contents of a TCP/IP packet.   [3]

....	The destination address
Reassembly data / packet order number	
Other tracking information	
....	....
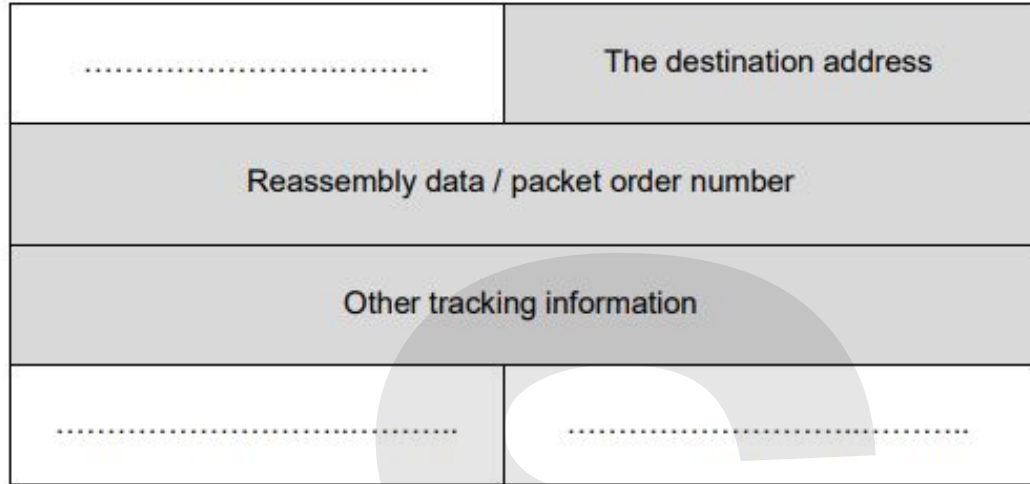
(b)   State the name of each layer in the TCP/IP 5-layer model.   [5]

Layer 5: ....

Layer 4: ....

Layer 3: ....

Layer 2: ....

Layer 1: ....

Describe packet switching.   [3]

....

....

....

....

....

....

There are many different types of network topology. State the most suitable topology for the following and **explain** how the topology will meet the requirement.   [9]

(a)   **Offers good security**

   Topology
   ....

   Explanation
   ....
   ....
   ....
   ....

(b)   **Network needed for a short time (temporary)**

   Topology
   ....

   Explanation
   ....
   ....
   ....

(c)   **Avoids collisions**

   Topology
   ....

   Explanation
   ....
   ....
   ....

Data is split into packets before transmission over a network. Name the **two** protocols that allow packets to be sent and received.   [2]

....

....