

4 Melinda and her friends set up a peer-to-peer network between their computers to share data.

(a) Describe the key features of a peer-to-peer network.

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(b) Describe **two** drawbacks to Melinda and her friends of using a peer-to-peer network.

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(c) Melinda connects her laptop to the internet through her router.

(i) Tick (✓) **one** box in each row to identify whether the task is performed by the router or not.

Task	Performed by router	Not performed by router
Receives packets from devices		
Finds the IP address of a Uniform Resource Locator (URL)		
Directs each packet to all devices attached to it		
Stores the IP and/or MAC address of all devices attached to it		

[2]

- (ii) Melinda mainly uses the internet to watch films and play computer games.

Tick (✓) **one** box to identify whether Melinda should connect to the router using a wired or wireless network **and** justify your choice.

Wired	
Wireless	

Justification

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- (d) Melinda sends emails from her webmail account (email account accessed through a website).

Explain whether Melinda is using the internet, or the World Wide Web (WWW), or both.

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(d) Draw **one** line from each term to its **most appropriate** description.

Term	Description
	It is only visible to devices within the Local Area Network (LAN)
Public IP address	It increments by 1 each time the device connects to the internet
Private IP address	A new one is reallocated each time a device connects to the internet
Dynamic IP address	It can only be allocated to a router
Static IP address	It is visible to any device on the internet
	It does not change each time a device connects to the internet

8 A school is setting up a network within one of its buildings.

- (a)** State whether the network will be a LAN (local area network) or a WAN (wide area network). Justify your choice.

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- (b)** One classroom in the building has 30 computers. The computers need to be connected to the network. Each computer has a network interface card (NIC).

Identify **two** possible devices that can be used to physically connect the 30 computers to the rest of the network.

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- (c)** The school has several laptops. Each laptop has a Wireless Network Interface Card (WNIC).

Describe the functions of a Wireless Network Interface Card.

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- 9 (a) Identify **two** differences between a public IP address and a private IP address.

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- (b) Complete the table by identifying the **most appropriate** term for each description.
Each term must be different.

Description	Term
Receives data packets from a network and forwards them onto a similar network	
Manages access to a centralised resource	
Joins networks that use different sets of rules to transmit data	
Monitors and controls incoming and outgoing network traffic based on set criteria	

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11 The Internet uses a client-server model.

(a) Describe the role of clients and servers on the Internet.

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(b) Computers on the Internet have IP addresses.

Describe the format of an IP address.

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5 Oscar is watching a concert on his laptop computer.

(a) The concert is streamed to his computer at the same time as it is taking place.

(i) Identify whether Oscar is using real-time or on-demand bit streaming. Justify your choice.

Streaming method

Justification

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(ii) The video of the concert repeatedly stops and restarts while Oscar is watching it on his laptop computer. His friend is watching the same video of the concert at the same time, in a different location, but he does not experience the same problem as Oscar.

Give **three** possible reasons why Oscar's video constantly stops and starts again.

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Joshua's laptop is connected to the router on his home network.

- a) The laptop has a private IP address. The router has both public and private IP addresses.

Explain the reasons why Joshua's laptop has a private IP address only, but the router both a private and a public IP address.

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- b) Joshua visits a website by entering its Uniform Resource Locator (URL).

Describe how the URL is converted into a matching IP address.

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- c) Give **one** example of a valid IPv4 address.

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