1.8 Network Protocols and Layers: 10-minute Pack

OCR J277 · Calculators not allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 State what the term 'bandwidth' means, and state the unit it is normally measured in for a home internet connection.

(Total for Question 1 is 2 marks)

2 Every device connecting to the internet needs both a MAC address and an IP address. Explain the difference between a MAC address and an IP address.

(Total for Question 2 is 4 marks)

3 Describe the client-server request-response cycle that takes place when a browser loads a web page, using the terms request and response in your answer.

(Total for Question 3 is 3 marks)

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Mark scheme · 1.8 Network Protocols and Layers: 10-minute Pack

Question 1

bandwidth is the maximum amount of data that can be transferred over a network connection in a given time, oe — **B1**

megabits per second (Mbps), or an equivalent unit (e.g. Gbps), oe — **B1**

Answer: Bandwidth is the maximum amount of data that can be transferred in a given time, usually measured in megabits per second (Mbps).

Question 2

a MAC address is a unique identifier assigned to a network interface at the point of manufacture, and it never changes, oe — **B1**

an IP address identifies a device's location on a particular network, and can change (e.g. each time the device joins a different network), oe — **B1**

a MAC address alone cannot be used to route data across the internet, because it does not indicate which network the device is on, oe — **B1**

so the IP address is used to route data between networks, while the MAC address is used to deliver the data to the correct device once it reaches the destination network, oe — **B1**

Answer: A MAC address is a permanent, manufacturer-assigned identifier used to deliver data to the right device on a network; an IP address identifies the device's network location and can change, so it is used to route data across the internet.

Question 3

the browser (client) sends a request to the web server, specifying which page/resource it wants, oe — **B1**

the web server processes the request and sends back a response, which contains the requested page/data (or an error if it cannot be found), oe — **B1**

the browser then displays the page contained in the response to the user, oe — **B1**

Answer: The browser (client) sends a request for a page to the web server; the server sends back a response containing the page, which the browser then displays.

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