MODULE E NETWORKS · E7

IP addressing and MAC addresses

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 3.4.2, 3.4.3

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**. All addresses on this sheet are made up.

1

Total: 6 marks

A label on a network interface card (NIC) shows this MAC address: **6E-14-AB-90-2C-F7**

(a) State what **MAC** stands for. **[1]**

(b) Describe the structure of a MAC address. Use the address above in your answer. **[3]**

(c) Explain when the NIC is given its MAC address, and whether the address normally changes. **[2]**

2

Total: 2 marks

(a) Explain the purpose of an internet protocol (IP) address. **[2]**

3 Total: 4 marks

(a) Tick (✓) **one** box in each row to show whether each statement is true of IPv4 only, IPv6 only, or both. **[4]**

Statement	IPv4	IPv6	Both
The address is 128 bits long			
The address is written as four denary numbers separated by full stops			
The address is allocated to a device by the network			
The address is written as eight groups of hexadecimal digits separated by colons			

4 Total: 4 marks

An engineer is given three IPv4 addresses: **A** 203.0.113.58 **B** 198.51.100.261 **C** 10.0.8.1

(a) Identify the address that is **not** valid and explain why. **[2]**

Address .....

(b) Explain why IPv6 addresses were introduced. **[2]**

5 Total: 4 marks

A print shop has a LAN. Its router gives out IP addresses. The LAN has a file server that holds customers' artwork, and staff laptops that join and leave the network during the day.

(a) Describe the difference between a **static** IP address and a **dynamic** IP address. **[2]**

(b) Explain whether the file server should have a static or a dynamic IP address. **[2]**

Total for this worksheet: 20 marks