Name: Class: Mark:

A home router has an internal IP address of 192.168.1.1.

The router also connects to the Internet via an ISP. It is given an IP address by the network provider. This address changes each time the router connects.

(a) Complete the table below by ticking whether the statement is true or false. [4]

|  |  |  |
| --- | --- | --- |
| **Statement** | **True** | **False** |
| The IP address 192.168.1.1 is used on this home network and may also be used on other home networks. |  |  |
| The external IP address that is allocated by the ISP is a dynamic IP address. |  |  |
| The same MAC address may be used on different devices in the world as long as it is unique on the private network it is connected to. |  |  |
| MAC stands for machine access control. |  |  |

(b) The router contains a MAC address of 23:9a:3c:de:a3:9b. [2]

State **two** components to the MAC address.

(c) The router allows users to connect to it with both an Ethernet cable and Wi-Fi.   
Explain why the router only needs one IP address, but two MAC addresses. [2]

(d) The external IP address given to the router is currently 182.19.13.72.

This is a 32-bit IPv4 address.

State the number of bits in an IPv6 IP address. [1]

(e) State **one** issue with IPv4 that IPv6 fixes. [1]

[Total 10 marks]