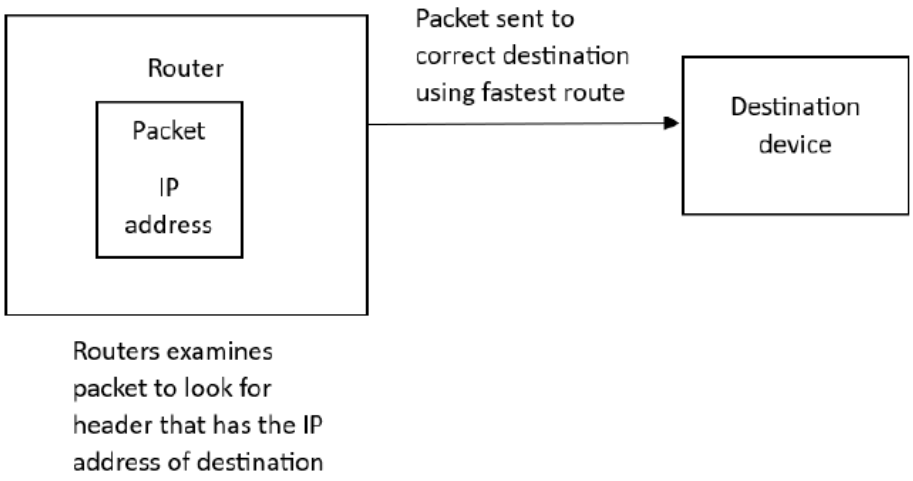
3.4 Hardware – Network hardware
ANSWERS

Question	Answer	Marks
8	The diagram demonstrates (**one** mark for each part): – The router examining the packet … – … looks for the packet header – … looking for the IP address of destination – The packet being sent toward its correct destination – … by the fastest route // decides which route it takes – Router is shown connecting devices/networks – Router is shown assigning an IP address to a device e.g.  	**4**

Question	Answer	Marks
6(a)(i)	• Network interface card/controller // NIC // WNIC	**1**
6(a)(ii)	• Media access control/MAC address // MAC	**1**
6(b)(i)	• Router	**1**
6(b)(ii)	**Three** from: • It can be used to **uniquely identify** a device (on a network) • It can change … • … each time the device is connected to the network	**3**

Question	Answer	Marks
8(a)	• C	**1**
8(b)	**Four** marks from: Any **FOUR** from: • It is denary based • … with numbers between 0 and 255 • It is 32 bits • 4 sets/groups of numbers • … **separated** by dots Any **TWO** from: • It is a **unique** address • It can be **static** or **dynamic** • It can be **public** or **private** • It contains the network prefix • … and the host number	**4**

3.4 Hardware – Network hardware
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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>3</td><td>One mark for each correct missing term or definition:

<table>
<tr><th>Term</th><th>Definition</th></tr>
<tr><td>router</td><td>a device that forwards packets to their correct destinations in a network</td></tr>
<tr><td>IP address</td><td>this address is assigned by the network and used to identify a device on a network</td></tr>
<tr><td>network interface card (NIC)</td><td>this is a component in a device that enables it to connect to a network</td></tr>
<tr><td>MAC address</td><td>this address is assigned by the manufacturer and is used to uniquely identify the device</td></tr>
<tr><td>firewall // proxy-server</td><td>this can be hardware or software based and filters traffic coming into and out of a network</td></tr>
</table>
</td><td>5</td></tr>
</table>

Question	Answer	Marks
5	The diagram demonstrates (**one** mark for each): • Packets sent through several routers • … taking different routes from device A to device B • Packets arrive out of order • Packets being reordered when all arrived at device B	4

Question	Answer	Marks
9(a)	Any **one** from: • They can both be used to identify a device (on a network) • They can both be static / dynamic • They are both unique (to a device on a network) • They can both be assigned by a router • They can both be public/private	1
9(b)	**Four** from: • IPv4 is usually written as denary • … IPv6 usually written as hexadecimal • IPv4 is separated using dots • … Pv6 is separated using colons • IPv4 is 32-bit • … IPv6 is 128-bit • IPv4 is 4 groups of digits • … IPv6 is 8 groups of digits • IPv4 digits are between 0 and 255 • … IPv6 digits are between 0000 and FFFF • IPv4 all 0s are displayed • … IPv6 can use double colons to replace repeated groups of 0000 • IPv4 has fewer available unique addresses • ... IPv6 has more available unique addresses	4
9(c)(i)	• Domain name server // DNS	1
9(c)(ii)	• Web browser	1

3.4 Hardware – Network hardware

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Question	Answer	Marks
8(a)	Any **two** from: • They are both unique addresses • They can both be used to **identify** a device (on a network) • They are both assigned to hardware • They can both be represented as hexadecimal	**2**
8(b)	Any **two** from: e.g. • A MAC address is assigned by the manufacturer, whereas an IP address is assigned by the network/router/ISP • A MAC address is represented as hexadecimal, whereas an IP address can sometimes be represented as numeric • A MAC address is normally static, whereas an IP address can be dynamic • A MAC address has 6 groups of digits, whereas an IP address has 4/8 groups • A MAC address is 6 bytes (48 bit), whereas an IP address is 4/16 bytes (32/128 bit)	**2**

Question	Answer	Marks
10	Any **three** from: • It is a unique address • It is assigned by the manufacturer • It can be used to identify a device • It contains the manufacturer ID/code/number • It contains the **serial** code/number • It is written in hexadecimal • It has 6 bytes/48 bits/6 pairs of digits • Does not (usually) change // static	**3**

Question	Answer	Marks
1(a)(i)	– manufacturer	**1**