

TCP/IP Networking 2016 Test 1

<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0
<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
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<input type="checkbox"/> 7	<input type="checkbox"/> 7	<input type="checkbox"/> 7	<input type="checkbox"/> 7	<input type="checkbox"/> 7	<input type="checkbox"/> 7
<input type="checkbox"/> 8	<input type="checkbox"/> 8	<input type="checkbox"/> 8	<input type="checkbox"/> 8	<input type="checkbox"/> 8	<input type="checkbox"/> 8
<input type="checkbox"/> 9	<input type="checkbox"/> 9	<input type="checkbox"/> 9	<input type="checkbox"/> 9	<input type="checkbox"/> 9	<input type="checkbox"/> 9

Grading:

For each question, exactly one of the four proposed answers is correct.

If the good answer and only the good answer box is crossed $\Rightarrow +1$ point. If one bad answer box is crossed and no other box is crossed $\Rightarrow -\frac{1}{3} = -0.333$ point. If 0 or more than 1 answer box is crossed $\Rightarrow +0$ point.

← Please encode your SCIPER number here and write your full name in the box below. ↓

Name, First Name:

.....

Question 1 The routing table at R is

Dest	Next Hop	Interface
23/8	23.12.6.5	eth1
23.0/9	23.11.5.4	eth2
0/0	23.10.4.3	eth3

R has a packet to forward with IP destination address equal to 23.1.2.3

- | | |
|--|--|
| <input type="checkbox"/> The packet must be forwarded to interface eth1. | <input type="checkbox"/> The packet can be forwarded to either interface eth1 or eth2. |
| <input type="checkbox"/> The packet must be forwarded to interface eth3. | <input checked="" type="checkbox"/> The packet must be forwarded to interface eth2. |

Question 2 An IPv4 host is configured with the subnet mask equal to 255.255.254.0. The length of the network part of its IPv4 address is...

- | | |
|--|-----------------------------------|
| <input type="checkbox"/> 16 bits. | <input type="checkbox"/> 24 bits. |
| <input checked="" type="checkbox"/> 23 bits. | <input type="checkbox"/> 17 bits. |

Question 3 We replace an Ethernet cable at 1 Gb/s by an Ethernet cable at 100 Mb/s.

- | | |
|---|--|
| <input checked="" type="checkbox"/> The transmission times are multiplied by 10, but the propagation times remain the same. | <input type="checkbox"/> The propagation and transmission times are both divided by 10. |
| <input type="checkbox"/> The propagation times are divided by 10, but the transmission times remain the same. | <input type="checkbox"/> The transmission times are multiplied by 10, but the propagation times are divided by 10. |

Question 4 Elaine's browser sends an HTTP request to a web server. With wireshark at the web server we observe the IP headers of the packets resulting from this activity.

- | | |
|---|---|
| <input type="checkbox"/> The IP headers contain the DNS name of Elaine's PC. | <input type="checkbox"/> The IP headers contain the DNS names of the web server and of Elaine's PC. |
| <input checked="" type="checkbox"/> The IP headers do not contain any DNS name. | <input type="checkbox"/> The IP headers contain the DNS name of the web server. |

Question 5 A web server at EPFL sends a file to Elaine's browser at ETHZ. No NAT is used. At the web server, we observe the IP addresses in packets sent to Elaine. The IP destination address is the IP address of...

- | | |
|--|---|
| <input type="checkbox"/> the EPFL DNS server. | <input type="checkbox"/> the ETHZ DNS server. |
| <input type="checkbox"/> the web server's default gateway. | <input checked="" type="checkbox"/> Elaine's machine. |

Question 6 The routing table at R is

Dest	Next Hop	Interface
23/8	23.12.6.5	eth1
23.0/9	23.11.5.4	eth2
0/0	23.10.4.3	eth3

R has a packet to forward with IP destination address equal to 128.178.156.29.

- ☐ The packet must be forwarded to interface eth1.
 ☒ The packet must be forwarded to interface eth3.
 ☐ The packet must be forwarded to interface eth2.
 ☐ The packet must be dropped because there is no match in the routing table.

Question 7 The IP layer uses packet-switching rather than store-and-forward because...

- ☒ it reduces buffer requirements in routers.
 ☐ it simplifies the addressing scheme.
 ☐ it decreases the bit error rate.
 ☐ it increases the end-to-end capacity of network paths.

Question 8 The 16th and 17th bits of the IPv6 address 2001:17f:c51::1 are

- ☐ 01
 ☐ 10
 ☒ 00
 ☐ nonexistent because this is not a valid IPv6 address.

Question 9 A web server at EPFL sends a file to Elaine's web browser at ETHZ. At the web browser, we observe the MAC addresses in packets received by the web browser.

- ☒ The source MAC address is the MAC address of a router.
 ☐ The source MAC address is the MAC address of the web server.
 ☐ There is no MAC address because Elaine's browser and the web server are not on the same LAN.
 ☐ The source MAC address is the MAC address of Elaine's machine.

Question 10 An application program at a computer A transfers a file to a computer B over the internet, using UDP. Some data is lost between intermediate routers.

- ☐ The application program does not need to do anything special, UDP takes care of retransmitting the missing data.
 ☐ This scenario is not possible, packets are never lost between routers.
 ☐ The application program does not need to do anything special, the routers take care of retransmitting the missing data.
 ☒ The application program needs to handle the loss, for example by retransmitting the missing data.