TCP/IP Networking 2016 Test 1

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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.
$\longleftarrow$ Please encode your SCIPER number here and write your full name in the box below. $\downarrow$

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

- ☐ The packet must be forwarded to interface eth1.
- ☐ The packet can be forwarded to either interface eth1 or eth2.
- ☐ The packet must be forwarded to interface eth3.
- ☐ 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...

- ☐ 16 bits.
- ☐ 24 bits.
- ☐ 23 bits.
- ☐ 17 bits.

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

- ☐ The transmission times are multiplied by 10, but the propagation times remain the same.
- ☐ The propagation and transmission times are both divided by 10.
- ☐ The propagation times are divided by 10, but the transmission times remain the same.
- ☐ 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.

- ☐ The IP headers contain the DNS name of Elaine's PC.
- ☐ The IP headers contain the DNS names of the web server and of Elaine's PC.
- ☐ The IP headers do not contain any DNS name.
- ☐ 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...

- ☐ the EPFL DNS server.
- ☐ the ETHZ DNS server.
- ☐ the web server's default gateway.
- ☐ 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 increases the end-to-end capacity of network paths.
- ☐ it decreases the bit error rate.

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

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

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.