CORRECTED

TCP/IP Networking 2015 Test 7

☐**0** ☐**0** ☐**0** ☐**0** ☐**0** ☐**0**
☐**1** ☐**1** ☐**1** ☐**1** ☐**1** ☐**1**
☐**2** ☐**2** ☐**2** ☐**2** ☐**2** ☐**2**
☐**3** ☐**3** ☐**3** ☐**3** ☐**3** ☐**3**
☐**4** ☐**4** ☐**4** ☐**4** ☐**4** ☐**4**
☐**5** ☐**5** ☐**5** ☐**5** ☐**5** ☐**5**
☐**6** ☐**6** ☐**6** ☐**6** ☐**6** ☐**6**
☐**7** ☐**7** ☐**7** ☐**7** ☐**7** ☐**7**
☐**8** ☐**8** ☐**8** ☐**8** ☐**8** ☐**8**
☐**9** ☐**9** ☐**9** ☐**9** ☐**9** ☐**9**

Grading:
For each question there is exactly one correct answer.
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 $\Rightarrow -\frac{1}{3}$ 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 Homer has only IPv6 in his dormitory. The dormitory receives an IPv4 only service from the ISP, and is connected to the ISP by a telecom box. The telecom box is configured either as a NAT64 or as an ALG64. Homer sends a request from his IPv6 iPad to a web server using HTTP. One packet is lost between the telecom box and the web server. Which system will re-transmit the lost packet ?

☐ The telecom box if it is a NAT64, else Homer's iPad.
☐ The telecom box in both cases.
☐ Homer's iPad in both cases..
■ The telecom box if it is an ALG64, else Homer's iPad.

Question 2 An IP packet that contains a UDP datagram is fragmented into 4 fragments. Say what is always true *at the destination* (before re-assembly).

1. All received fragments contain an IP header with the same destination IP address.
2. All fragments contain an IP header with the same TTL.

☐ 2 and not 1.
■ 1 and not 2.
☐ Neither 1 nor 2.
☐ Both 1 and 2.

Question 3 A dual-stack host connects to infoscience.epfl.ch. How does the host find out whether to use IPv4 or IPv6?

■ By the DNS.
☐ By receiving ICMP error messages.
☐ By ARP.
☐ By pinging infoscience.epfl.ch with IPv4 and with IPv6.

Question 4 May a router fragment an IP packet ?

☐ Yes with IPv4, yes with IPv6.
■ Yes with IPv4, no with IPv6.
☐ No with IPv4, no with IPv6.
☐ No with IPv4, yes with IPv6.

Question 5 An IP packet that contains a UDP datagram is fragmented by a machine M into 4 fragments. Say what is always true *for the fragments that leave* M (just after fragmentation).

1. All fragments contain an IP header with the same source IP address.
2. All fragments contain an IP header with the same TTL.

☐ 2 and not 1.
☐ 1 and not 2.
☐ Neither 1 nor 2.
■ Both 1 and 2.

Question 6 Homer has only IPv6 in his dormitory. The dormitory receives an IPv4 only service from the ISP, and is connected to the ISP by a NAT64. Homer sends UDP datagrams to an IPv4 server in the domain of the ISP. When the NAT64 forwards one of the IP packets containing these datagrams (from the dormitory to the ISP)...

- ☐ it maps the IPv4 destination address to an IPv6 destination address by using a simple stateless algorithm.
- ☐ it maps the IPv6 destination address to an IPv4 destination address using its NAT address and port mapping table.
- ■ it maps the IPv6 destination address to an IPv4 destination address by using a simple stateless algorithm.
- ☐ it maps the IPv4 destination address to an IPv6 destination address using its NAT address and port mapping table.

Question 7 A router R performs proxy ARP for all IPv4 addresses in the range 2.2.0.0 to 2.2.255.255. A host H, onlink with R, sends an ARP request for the IPv4 address 2.2.3.4.

- ■ R responds with its own MAC address.
- ☐ R should not respond to H.
- ☐ R responds with the broadcast MAC address.
- ☐ R responds with the MAC address of a system that has IP address 2.2.3.4.

Question 8 The traceroute program prints the names of the intermediate hops. It finds these names...

- ☐ in the ICMP replies obtained from the intermediate hops.
- ■ by sending PTR queries to a name server.
- ☐ by sending AAAA queries to a name server.
- ☐ by sending A and AAAA queries to a name server.

Question 9 An IP packet that contains a TCP segment is fragmented. One fragment is lost. This is the only loss affecting this TCP connection. What will be re-transmitted by the source ?

- ■ The entire TCP segment.
- ☐ Only the lost fragment.
- ☐ If the loss is detected by fast retransmit, then only the lost fragment, else the entire segment.
- ☐ If the loss is detected by timeout, only the lost fragment, else the entire segment..

Question 10 May a router re-assemble the fragments of a fragmented IP packet ?

- ■ No with IPv4, no with IPv6.
- ☐ Yes with IPv4, no with IPv6.
- ☐ Yes with IPv4, yes with IPv6.
- ☐ No with IPv4, yes with IPv6.