TCP/IP Networking 2017 Test 2

☐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, exactly one of the four proposed answers is correct. If the good answer and only the good answer box is crossed ⇒ +1 point. If one bad answer box is crossed and no other box is crossed ⇒ $-\frac{1}{3} = -0.333$ point. If 0 or more than 1 answer box is crossed ⇒ +0 point.
←— Please encode your SCIPER number here and write your full name in the box below. ↓

Name, First Name:

....

Question 1 A sends one unicast IPv4 packet to C over Ethernet. The IPv4 destination address observed at point 1 is

☐ the IPv4 address of S1's west interface.

☐ the IPv4 address of S2's west inter-

face.

☐ 255.255.255.255.

☐ C's IPv4 address.

Question 2 A host sends an IPv4 packet with TTL = 255.

☐ This packet cannot be forwarded by a bridge but can be forwarded by a router.

☐ This packet can be forwarded by a router or a bridge.

☐ This packet cannot be forwarded by neither a router nor a bridge.

☐ This packet cannot be forwarded by a router but can be forwarded by a bridge.

Question 3 Lisa makes a local area network by installing 6 Ethernet standard bridges, connected with Ethernet cables to form a ring.

☐ This works because bridges automatically disable one port on one switch.

☐ This does not work because bridges must be cabled without loop.

☐ This works only for unicast traffic; broadcast traffic has to be disabled because it would loop.

☐ This works because bridges learn source MAC addresses on the frames they observe.

Question 4   When an IPv6 host A wants to know the MAC address that corresponds to a target IPv6 address B, it sends an NDP NS message. The IPv6 destination address of this message is:

☐ this packet does not have an IP destination address because it is not an IP packet.

☐ the link-local broadcast address.

☐ the IPv6 broadcast address `ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff`.

☐ a multicast address algorithmically derived from B.

Question 5 A sends one unicast Ethernet frame to C. The MAC destination address observed at point 1 is

☐ the MAC address of S2's west interface

☐ the MAC address of S1's west interface

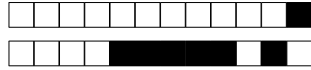☐ `ff:ff:ff:ff:ff:ff`

☐ C's MAC address

Question 6   Say what is true about the spanning tree protocol.

1. bridges compute a shortest path tree to every other bridge
2. bridges elect a root

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

Question 7   We flip the 17th bit of the IP address: `2001:1::bebe`. What is the result?

☐ `2001:8001::bebe`   ☐ `2001:2::bebe`

☐ `2001:0::bebe`   ☐ `2001:3::bebe`

Question 8   Homer makes a LAN with two WIFi base stations BS1 and BS2, interconnected by Ethernet cables and a bridge. A is associated to BS1 and B is associated to BS2. By which mechanism does the bridge know where to send packets destined to A and B ?
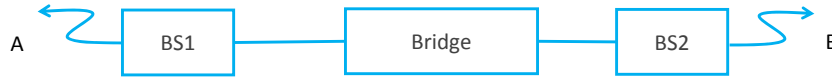
- [ ] The bridge remembers all MAC source addresses and broadcast frames if it does not know where the destination is.
- [ ] The base stations inform the bridge of the presence of A and B (which they know from their association data) using the spanning tree protocol.
- [ ] The spanning tree protocol learns all addresses without intervention of the WiFi association data.
- [ ] The bridge computes shortest paths to all destinations.

Question 9   When an IPv4 host A wants to know the MAC address that corresponds to a next-hop IPv4 address B, say what it can use:

1. the ARP protocol
2. the DHCP protocol

- [ ] 1 and not 2.
- [ ] Neither 1 nor 2.
- [ ] Both.
- [ ] 2 and not 1.

Question 10   With SLAAC, an IPv6 host obtains:

1. A link-local address.
2. A valid subnet prefix, when a router that participates in SLAAC is present in the subnet.

- [ ] 1 and not 2.
- [ ] 2 and not 1.
- [ ] Neither 1 nor 2.
- [ ] Both.