+1/1/60+

TCP/IP Networking, 2018, Quiz 2

Use the separate answer sheet to return your answers. Do not return this sheet. We recommend that you first write your tentative answers on this sheet. In a second phase, when you are certain about your answers, you can mark them on the answer sheet.

For each question there is exactly one correct answer. If the good answer and only the good answer box is marked $\Rightarrow +1$ point. If one bad answer box is marked and no other box is marked $\Rightarrow -\frac{1}{3}$ point. If 0 or more than 1 answer box is marked $\Rightarrow 0$ point.

Question 1 Hosts A and B are in the same VLAN but are connected to different layer-2 switches. C is connected to the same layer-2 switch as A but is in a different VLAN than A and B. A sends an Ethernet frame with MAC destination address `ff:ff:ff:ff:ff:ff`. Which host should receive this frame ?

A B and C.
B Neither B nor C.
C C and not B.
D B and not C.

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

A This packet was forwarded by 255 routers or bridges.
B The IPv4 source of this packet is on-link.
C This packet is invalid and should be discarded.
D This packet was forwarded by 255 routers.

Question 3 Transparent bridges obtain their forwarding tables...

A By learning from source MAC addresses.
B By learning from destination MAC addresses.
C By observing ARP or NDP packets.
D From DHCP.

Question 4 When an IPv4 host A wants to know the MAC address that corresponds to a target IPv4 address B, it sends an ARP request. The IPv4 destination contained in the IPv4 header of the message that contains the ARP request is:

A This ARP request is not contained in an IPv4 packet.
B 255.255.255.255
C B
D A multicast address algorithmically derived from B.

Question 5 An IPv6 host A uses stateful DHCP. What configuration information does it normally obtain from the DHCP server ?

A A's IPv6 address, A's network mask, the IPv6 addresses and MAC addresses of A's default gateway and of the DNS server to be used by A.
B A's MAC and IPv6 addresses, A's network mask, the IPv6 addresses of A's default gateway and of the DNS server to be used by A.
C A's IPv6 address, A's network mask, the IPv6 address and network mask of A's default gateway and the IPv6 address of the DNS server to be used by A.
D A's IPv6 address, A's network mask, the IPv6 addresses of A's default gateway and of the DNS server to be used by A.

Question 6 A network of transparent Ethernet bridges uses the Spanning Tree Protocol and constitutes one single local-area network. One of the bridges, say B, has an Ethernet frame to forward; its MAC destination address is `ff:ff:ff:ff:ff:ff`.

- [A] This frame is forwarded by B on all its interfaces but it will not be forwarded further by the other bridges.
- [B] This frame is forwarded by B on all its interfaces and it will be forwarded further by the other bridges only if the value of the TTL allows it.
- [C] This frame is forwarded by B and all bridges along the spanning tree.
- [D] This frame is not be forwarded by B.

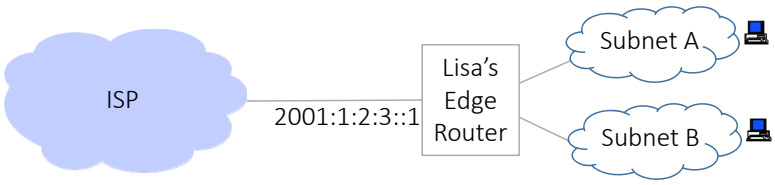
Question 7 A sends one unicast Ethernet frame to B. The MAC destination address observed at point 1 is

- [A] B's MAC address
- [B] the MAC address of Sw
- [C] the MAC address of Sw
- [D] the MAC address of Rw

Question 8 A number of bridges use the Spanning Tree Protocol and are interconnected to form a ring. The entire network is one single local-area network. The Spanning Tree Protocol...

- [A] sets one of the ports of one of the bridges to the blocking state.
- [B] sets all ports of all bridges to a forwarding state.
- [C] sets one port of every bridge to the blocking state.
- [D] orientates the ring so that communication is possible in only one of the two possible directions.

Question 9 Lisa has a small IPv6 network at home with two local subnetworks, connected to her internet provider by an edge router. Her edge router uses DHCP with prefix delegation and receives from her operator the address `2001:1:2:3::1` and the prefix `2001:1:2:3/64`. The prefix `2001:1:2:3::/68` is excluded from the delegation.



Which of the following are valid numbering plans for Lisa's home network ?

1. All subnet masks are 80 bits, subnet A has prefix `2001:1:2:3:a::/80` and subnet B has prefix `2001:1:2:3:b::/80`
2. All subnet masks are 80 bits, subnet A has prefix `2001:1:2:3:100a::/80` and subnet B has prefix `2001:1:2:3:100b::/80`

A 2 and not 1.
B Neither 1 nor 2.
C Both.
D 1 and not 2.

Question 10 When an IPv6 host A wants to know the MAC address that corresponds to a target IPv6 address B, it sends an NDP/NS request. The IPv6 destination contained in the IPv6 header of the message that contains the NDP/NS request is:

A `ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff`
B B
C This NDP/NS request is not contained in an IPv6 packet.
D A multicast address algorithmically derived from B.