

MC questions for Unit 4

=====

Question 1

Of the prefixes listed below, which provides the longest prefix match for 136.127.1.1?

- ☐ 136.127.1.128/25
- ☐ 136.127.0.0/16
- ☐ 136.0.0.0/8
- ☒ 136.127.1.0/24

Question 2

Of the prefixes listed below, which provides the longest prefix match for 136.127.4.1?

- ☐ 136.127.4.0/21
- ☐ 136.127.0.0/20
- ☒ 136.127.0.0/21
- ☐ 136.127.0.0/22

Question 3

Consider a link that has a MTU of 1000 bytes. Assume that you have 20 bytes of header information with each packet, i.e., the maximum payload per packet is 980 bytes.

What is the minimum number of packets required to transmit 1980 bytes of payload, and what is the size of the last packet assuming the previous packets are of the maximum size?

- ☐ 3 packets and the third packet is of size 20 bytes
- ☐ 2 packets and the second packet is 980 bytes
- ☐ 2 packets and the second packet is 1000 bytes
- ☒ 3 packets and the third packet is of size 40 bytes

Question 4

Consider a network where headers are of size 20 bytes. Assume that a router accepts packets from a link with MTU of 2000 bytes and outputs them on to a link with MTU of 500 bytes. *If the router receives an input packet of size 2000, how many fragments are generated by the router as it transmits the input over the link with MTU of 500?*

- ☒ 5
- ☐ 4
- ☐ 3
- ☐ 6

Question 5

Assume that a router connects a link L1 to link L2. Assume that the MTU of L2 is slightly more than half that of the MTU of L1 and that all maximum-sized packets on L1 are fragmented into two packets on L2. Also assume that 20% of packets sent on L2 are corrupted or lost. *What is the probability that all of the fragments of a maximum-sized packet sent across L1 are transmitted successfully across L2?* Do not consider retransmissions.

- ☒ 0.64
- ☐ 0.4
- ☐ 0.2
- ☐ 0.6

Question 6

Which of the following statements regarding a NAT is NOT true?

- ☐ Different NAT table entries could contain different external IP addresses
- ☐ Outgoing data packet that does not contain a matching internal IP:Port pair in the NAT table result in the creation of a new NAT table entry
- ☐ There could be multiple NAT table entries for a single internal IP, Port pair
- ☒ There could be multiple NAT table entries for a single internal IP address
- ☐ Incoming data packet that does not contain a matching external IP:Port pair would be dropped
- ☐ Different NAT table entries could contain different internal IP addresses
- ☐ There could be multiple NAT table entries for a single external IP address

Question 7

Which of the following is TRUE about IPv6?

- ☒ IPv6 contains 2^{96} times the number of IP addresses in IPv4
- ☐ IPv6 can represent a maximum of 2^{96} IP addresses
- ☐ IPv6 is a backwards compatible modification to IPv4
- ☐ IPv6 contains 4 times the number of IP addresses in IPv4

Question 8

All nodes in a network have been running for a long time when the DHCP server suddenly goes down. *What happens to the communication in that network, assuming no new node joins the network?* Pick the single best answer.

- ☐ The nodes would only be able to communicate outside of their network.
- ☐ The nodes would need to use MAC address to communicate with each other.
- ☒ The hosts will continue to communicate normally for a period of time.
- ☐ The nodes will not be able to communicate with any other nodes.

Question 9

What is the main difference between routing and forwarding? Check ALL correct statements.

- ☒ Routing is a network-wide process, forwarding is a local operation
- ☐ They are different words for the same idea.
- ☐ Routing is based on shortest paths while forwarding is based on a spanning tree
- ☒ Routing is the process of finding paths, forwarding is the process of sending a packet along a path

Question 10

Your task is to divide the IP prefix for your company, 12.24.0.0/17 into four equal-size subnets. *What are the prefixes of the subnets?*

- ☐ 12.24.0.0/18, 12.24.32.0/18, 12.24.64.0/18, and 12.24.96.0/18
- ☐ 12.24.0.0/18, 12.24.64.0/18, 12.24.128.0/18, and 12.24.192.0/18
- ☐ 12.24.0.0/19, 12.24.64.0/19, 12.24.128.0/19, and 12.24.192.0/19
- ☒ 12.24.0.0/19, 12.24.32.0/19, 12.24.64.0/19, and 12.24.96.0/19