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Quiz 3

Due Nov 28 at 11:30am   **Points** 10   **Questions** 10   **Time Limit** 30 Minutes

Submission Details:

Time:	28 minutes
Current Score:	9 out of 10
Kept Score:	9 out of 10

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	28 minutes	9 out of 10

Score for this quiz: **9** out of 10
Submitted Dec 21 at 10:50am
This attempt took 28 minutes.

Question 1   1 / 1 pts

Consider a router that interconnects three subnets: Subnet 1, Subnet 2, and Subnet 3 that share a network with address 223.1.17/24. Match network address (prefix) (in the form a.b.c.d/x) for each of the following subnets.

Correct! **Subnet 1 is required to support at least 12 interfaces**   223.1.17.64/28

Correct! **Subnet 2 is to support at least 60 interfaces**   223.1.17.0/26

Correct! **Subnet 3 is to support at least 90 interfaces**   223.1.17.128/25

Other Incorrect Match Options:
- 223.1.17.192/24

Question 2   1 / 1 pts

The key differences between routing and forwarding is that forwarding is a router's local action of transferring packets from its input interfaces to its output interfaces and forwarding takes place at very short timescales (typically a few nanoseconds), and thus is typically implemented in hardware. Routing refers to the network-wide process that determines the end-to-end paths that packets take from sources to destinations. Routing takes place on much longer timescales (typically milliseconds to seconds) and is often implemented in software.

Correct! ● True

○ False

Question 3   1 / 1 pts

Suppose there are three routers between a source host and a destination host. Ignoring fragmentation, an IP datagram sent from the source host to the destination host will travel over how many interfaces?
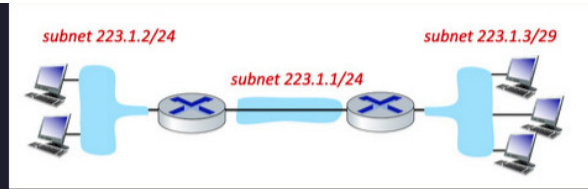
Correct! ● 8

○ 3

○ 4

○ 10

○ 6

○ 2

Question 4   1 / 1 pts

Consider the three subnets in the diagram below.

subnet 223.1.2/24   subnet 223.1.3/29

subnet 223.1.1/24

Which of the following addresses can *not* be used by an interface in the 223.1.3/29 network? Check all that apply.

☐ 223.1.3.6

☐ 223.1.3.2

Correct! ☑ 223.1.3.16

Correct! ☑ 223.1.2.6

Correct! ☑ 223.1.3.28

Nice! This answer is correct.

Question 5   0.33 / 1 pts

Consider a block of 8192 IP addresses is available starting at 194.24.0.0. Suppose that ISP A is assigned the addresses 194.24.0.0 through 194.24.7.255, along with mask 255.255.248.0. Next, ISP B is assigned addresses 194.24.16.0 through 194.24.31.255, along with subnet mask 255.255.240.0. Finally, ISP C is assigned addresses 194.24.8.0 through 194.24.11.255 and mask 255.255.252.0. Match to each ISP the correct number of addresses and prefixes

Correct!   ISP A   [2048 addresses and 194.24.0.0 ∨]

You Answered   ISP C   [4096 addresses and 194.24.16. ∨]

1024 addresses and 194.24.8.0/22 prefix

You Answered   ISP B   [1024 addresses and 194.24.8.0 ∨]

4096 addresses and 194.24.16.0/20 prefix

Question 6   1 / 1 pts

Suppose an application generates chunks of 40 bytes of data every 20 msec, and each chunk gets encapsulated in a TCP segment and then an IP datagram. What percentage of each datagram will be overhead?

Correct!   ⦿ 50%

○ 20%

○ 33%

○ 40%

Question 7   1 / 1 pts

Consider a cross-country link with propagation delay of 15 msec and a transmission rate R of 1 Gbps. For a stop-and-wait protocol with a packet of size 1500 bytes, what is the percentage utilization of the link?

Correct!   ⦿ 0.04%

○ 4%

○ 40%

○ 400%

Question 8   1 / 1 pts

Suppose that as shown in the figure below, a TCP sender is sending segments with 100 bytes of payload. The TCP sender sends five segments with sequence numbers 100, 200, 300, 400, and 500. Suppose that the segment with sequence number 300 is lost. The TCP receiver will buffer correctly-received but not-yet-in-order segments for later delivery to the application layer (once missing segments are later received).

Complete the sentences below ....

Correct! | After receiving segment 100, the receiver responds with an ACK with value: | 200 |

Correct! | After receiving segment 200, the receiver responds with an ACK with value: | 300 |

Correct! | After receiving segment 500, the receiver responds with an ACK with value: | 300, a duplicate ACK |

Correct! | After receiving the *retransmitted* segment 300, the receiver responds with an ACK with value: | 600 |

Nice! This answer is correct.

Question 9   0.67 / 1 pts

Which of the following statements about TCP's Additive-increase-multiplicative-decrease (AIMD) algorithm are true? Check all that are true.

☐ AIMD is a network-assisted approach to congestion control.

Correct! | ☑ AIMD is a end-end approach to congestion control.

☐ AIMD *always* cuts the congestion window size, $cwnd$, in half whenever loss is detected.

Correct! | ☑
AIMD cuts the congestion window size, $cwnd$, in half whenever loss is detected by a triple duplicate ACK (TCP Reno).

Correct! | ☑ AIMD cuts the congestion window size, $cwnd, i$ to 1 whenever a timeout occurs (TCP Tahoe).

☐ AIMD uses the measured RTT delay to detect congestion.

You Answered | ☑ AIMD uses observed packet loss to detect congestion.

Question 10   1 / 1 pts

Consider the pattern of red and green packet arrivals to a router's output port queue, shown below. Suppose each packet takes one time slot to be transmitted and can only begin transmission at the beginning of a time slot after its arrival. Indicate the sequence of departing packet numbers (at t = 1, 2, 3, 4, 5, 6, 7) under **FIFO** scheduling. Give your answer as 7 ordered digits (each corresponding to the packet number of a departing packet), with a single space between each digit, and no spaces before the first or after the last digit, e.g., in a form like 7 6 5 4 3 2 1).

1 2 3 4 5 6 7

1 2 3 4 5 6 7

Nice! This answer is correct.

Quiz Score: **9** out of 10