Started on	Friday, 5 November 2021, 4:04 PM
State	Finished
Completed on	Monday, 8 November 2021, 3:32 PM
Time taken	2 days 23 hours
Marks	59.17/100.00
Grade	**5.92** out of 10.00 (**59**%)

Information

The questions on this page are all yes/no questions. Please read them carefully.

Question **1**

Correct

Mark 1.00 out of 1.00

The Bellman-Ford algorithm assumes that each node in the network knows the full network topology.

Select one:

- True
- False ✔

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00.

Question **2**

Correct

Mark 1.00 out of 1.00

RIP is typically implemented as an application-layer protocol.

Select one:

- True ✔
- False

Correct

Marks for this submission: 1.00/1.00.

Question **3**

Correct

Mark 1.00 out of 1.00

BGP uses TCP in its internal and external BGP sessions.

Select one:

- True ✔
- False

Correct

Marks for this submission: 1.00/1.00.

Question **4**

Correct

Mark 0.00 out of 1.00

Only intra-AS routing protocols feed entries into router's forwarding table.

Select one:

- True
- False ✔

Correct

Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.00/1.00**.

Question **5**

Correct

Mark 1.00 out of 1.00

A stub AS allows traffic to pass through because it is always connected to another transit AS.

Select one:

- True
- False ✔

Correct

Marks for this submission: 1.00/1.00.

Question **6**

Correct

Mark 1.00 out of 1.00

Hierarchical routing is adopted in the Internet.

Select one:

- True ✔
- False

Correct

Marks for this submission: 1.00/1.00.

Question **7**

Correct

Mark 0.00 out of 1.00

Poisoned reverse can solve the count-to-infinity problem in distance vector protocol.

Select one:

- True
- False ✔

Correct

Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.00/1.00**.

Question **8**

Correct

Mark 0.00 out of 1.00

Port numbers are used for addressing hosts in NAT (Network Address Translation).

Select one:

- True ✔
- False

Correct

Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.00/1.00**.

Question **9**

Correct

Mark 1.00 out of 1.00

Parity check can detect 2-bit errors.

Select one:

- True
- False ✔

Correct

Marks for this submission: 1.00/1.00.

Question **10**

Correct

Mark 1.00 out of 1.00

CRC uses modulo-2 arithmetic to generate additional redundancy bits.

Select one:

- True ✔
- False

Correct

Marks for this submission: 1.00/1.00.

Question **11**

Correct

Mark 1.00 out of 1.00

In Go-Back-N, each packet has its own logical timer since only one packet will be retransmitted on timeout.

Select one:

- True
- False ✔

Correct

Marks for this submission: 1.00/1.00.

Question **12**

Correct

Mark 1.00 out of 1.00

OSPF allows multiple same-cost paths to be used for the same source-destination pair.

Select one:

- True ✔
- False

Correct

Marks for this submission: 1.00/1.00.

Question **13**

Correct

Mark 1.00 out of 1.00

There is no checksum field in the IPv6 header.

Select one:

- True ✔
- False

Correct

Marks for this submission: 1.00/1.00.

Question **14**

Correct

Mark 1.00 out of 1.00

HTTP uses UDP as its transport layer protocol to reduce latency between client and server.

Select one:

- True
- False ✔

Correct

Marks for this submission: 1.00/1.00.

Question **15**

Correct

Mark 0.00 out of 1.00

DNS uses the same format for its query and reply messages.

Select one:

- True ✔
- False

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.00/1.00**.

Information

In all the questions on this page there is only one correct answer.

Question **16**

Correct

Mark 2.00 out of 2.00

Which field is NOT present in the IPv6 datagram:

Select one:

- a. Version
- b. Options ✔
- c. Source address
- d. Hop limit

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **17**

Correct

Mark 2.00 out of 2.00

Which port number is typically used by DNS protocol?

Select one:

- a. 53 ✔
- b. 89
- c. 80
- d. 110

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **18**

Correct

Mark 2.00 out of 2.00

What is the Hamming distance between 1010 1110 and 1011 0001?

Select one:

- a. 4
- b. 3
- c. 2
- d. 5 ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **19**

Correct

Mark 2.00 out of 2.00

Which of the following mechanisms is used for detecting packet loss at the sender side in the Internet?

Select one:

- a. Pipelining
- b. Checksum
- c. Sequence number
- d. Timer ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **20**

Correct

Mark 2.00 out of 2.00

When TCP does the round-trip time sampling, it never computes a sample round-trip time (SampleRTT) for a segment that has been retransmitted. Why?

Select one:

- a. If a sender retransmits a segment and receives an ACK, it does not know whether this ACK corresponds to the earlier segment or the retransmitted segment. The round-trip time estimation becomes inaccurate. ✔
- b. A retransmitted segment is more likely to be delayed or lost again.
- c. A retransmitted segment is more likely to be corrupted.
- d. Retransmission can cause network congestion.

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **21**

Correct

Mark 0.00 out of 2.00

What is use of the receive window field in TCP segments?

Select one:

- a. Congestion control
- b. Flow control ✔
- c. Multiplexing and de-multiplexing
- d. None of the above

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **0.00/2.00**.

Question **22**

Correct

Mark 2.00 out of 2.00

In TCP 3-way handshaking, the client-side TCP first sends a SYN segment to the server-side TCP and the server will send back a SYNACK segment. Finally the client sends another segment to the server to set up the TCP connection. Suppose the randomly chosen initial sequence numbers for the client and server are client_isn and server_isn respectively. What are the Sequence number (Seq#) and ACK number (ACK#) in the last segment (from client to server)?

Select one:

a. Seq# = server_isn+1, ACK# = client_isn+1

b. Seq# = client_isn, ACK# = server_isn

c. Seq# = client_isn+1, ACK# = server_isn+1 ✔

d. Seq# = client_isn+1, ACK# = server_isn

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **23**

Correct

Mark 2.00 out of 2.00

Concerning the **slow start** phase of TCP congestion control, which of the following statements is correct?

Select one:

a. During this phase, the TCP senders begins by transmitting at a fast rate and increases its sending rate exponentially

b. During this phase, the TCP senders begins by transmitting at a fast rate and increases its sending rate linearly

c. During this phase, the TCP senders begins by transmitting at a slow rate and increases its sending rate linearly

d. During this phase, the TCP senders begins by transmitting at a slow rate and increases its sending rate exponentially ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **24**

Correct

Mark 0.00 out of 2.00

In TCP congestion control, the arrival of three duplicate ACKs is different from a timeout event because:

Select one:

a. The arrival of three duplicate ACKs indicates that the network is more congested, compared with a timeout;

b. A timeout event means the network less congested, compared with the arrival of three duplicated ACKs;

c. The arrival of three duplicate ACKs indicates that the network is less congested, compared with timeout; ✔

d. None of the above

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **0.00/2.00**.

Question **25**

Correct

Mark 0.00 out of 2.00

In the Go-Back-N protocol, what does the receiver do when an out-of-order packet arrives:

Select one:

a. The receiver discards this packet and does not send any ACK;

b. The receiver discards this packet and sends an ACK for the last in-order packet that has arrived successfully; ✔

c. The receiver buffers this packet and does not send an ACK;

d. The receiver buffers this packet and sends an ACK for it;

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **0.00/2.00**.

Information

In all the questions on this page there can be arbitrarily many correct answers (there is always at least one).

Question **26**

Correct

Mark 1.50 out of 2.00

Which of the following mechanisms can be used to implement a reliable data transfer protocol?

Select one or more:

- a. Timer ✔
- b. Sequence number ✔
- c. Checksum ✔
- d. Acknowledgement ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **1.50/2.00**.

Question **27**

Correct

Mark 2.00 out of 2.00

Which protocols are used for intra-AS routing in the Internet:

Select one or more:

- a. RIP ✔
- b. OSPF ✔
- c. BGP
- d. All of the above

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **28**

Correct

Mark 2.00 out of 2.00

Which of the following would be expected to own a transit AS?

Select one or more:

- a. Spark ✔
- b. Netflix
- c. University of Canterbury
- d. Vodafone ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **29**

Correct

Mark 2.00 out of 2.00

Two nodes (A and B) use Go-Back-N with a 4-bit sequence number and a window size of N=6. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3, 4 and receives an ACK for packet 2 only. Which packet(s) will node A believe to have arrived successfully at B?

Select one or more:

- a. 2 ✔
- b. 3
- c. 0 ✔
- d. 1 ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **30**

Correct

Mark 1.33 out of 2.00

Two nodes (A and B) use Go-Back-N with a 4-bit sequence number and a window size of N=6. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3, 4 and receives an ACK for packet 2 only. What are the available sequence numbers in A's window afterwards (after window slides)?

Select one or more:

- a. 8 ✔
- b. 10
- c. 5 ✔
- d. 9
- e. 7 ✔
- f. 6 ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **1.33/2.00**.

Question **31**

Correct

Mark 2.00 out of 2.00

Two nodes (A and B) use Go-Back-N with a 4-bit sequence number and a window size of N=6. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3, 4 and receives an ACK for packet 2 only. Which packet(s) will be retransmitted when a timeout occurs?

Select one or more:

- a. 0
- b. 1
- c. 2
- d. 4 ✔
- e. 3 ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **32**

Correct

Mark 2.00 out of 2.00

Two nodes (A and B) use Go-Back-N with a 4-bit sequence number and a window size of N=6. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3, 4 and only packets 0, 1, 3, 4 arrive at node B. Which packets will be delivered to the higher layers by node B?

Select one or more:

- a. 0 ✔
- b. 4
- c. 3
- d. 1 ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **33**

Correct

Mark 0.00 out of 2.00

Two nodes (A and B) use Go-Back-N with a 4-bit sequence number and a window size of N=6. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3, 4 and only packets 0, 1, 3, 4 arrive at node B. When packet 3 and 4 arrive, which ACK(s) will be sent by node B?

Select one or more:

- a. ACK0
- b. ACK1 ✔
- c. ACK3
- d. ACK4

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **0.00/2.00**.

Question **34**

Correct

Mark 2.00 out of 2.00

Two nodes (A and B) use Selective Repeat with a 3-bit sequence number and a window size of N=4. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3 and only packets 2, 3 arrived at B correctly. Which actions will be taken by node B?

Select one or more:

- a. B buffers packet 3; ✔
- b. B buffers packet 2; ✔
- c. B sends back ACK3; ✔
- d. B sends back ACK2; ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **35**

Correct

Mark 2.00 out of 2.00

Two nodes (A and B) use Selective Repeat with a 3-bit sequence number and a window size of N=4. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3 and all packets arrived at B correctly. What are the sequence numbers in B's window afterwards?

Select one or more:

- a. 3
- b. 6 ✔
- c. 7 ✔
- d. 5 ✔
- e. 4 ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **36**

Correct

Mark 2.00 out of 2.00

Two nodes (A and B) use Selective Repeat with a 3-bit sequence number and a window size of N=4. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3 and all packets arrived at B correctly. After B sends ACKs, all the ACKs get lost unfortunately. What are the sequence numbers in A's window?

Select one or more:

- a. 0 ✔
- b. 1 ✔
- c. 3 ✔
- d. 4
- e. 2 ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **37**

Correct

Mark 2.00 out of 2.00

Two nodes (A and B) use Selective Repeat with a 3-bit sequence number and a window size of N=4. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3 and all packets arrived at B correctly. After B sends ACKs, only ACK0 and ACK2 arrive at A successfully. After a while if there is a timeout at node A (assuming no new ACKs arrive before this timeout), which packet(s) will be retransmitted?

Select one or more:

- [x] a. 1
- [ ] b. 2
- [ ] c. 3
- [ ] d. 0

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **38**

Correct

Mark 2.00 out of 3.00

Two nodes (A and B) use Selective Repeat with a 3-bit sequence number and a window size of N=4. A is transmitting and B is receiving. Suppose that A sends packets 0, 1, 2, 3 and all packets arrived at B correctly. After B delivers packets and sends back ACKs, B receives packet 2 again. Which action(s) must be taken by node B?

Select one or more:

- [ ] a. Node B delivers packet 2 to the higher layer;
- [x] b. Node B sends back ACK2;
- [ ] c. Node B buffers packet 2;
- [ ] d. No actions

Your answer is correct.

Correct

Marks for this submission: 3.00/3.00. Accounting for previous tries, this gives **2.00/3.00**.

Question **39**

Correct

Mark 1.33 out of 2.00

Which of the following statements about TCP's reliable data transfer scheme are correct:

Select one or more:

- [ ] a. TCP retransmits all unacknowledged segments when there is a timeout;
- [x] b. TCP's reliable data transfer scheme typically uses one single retransmission timer; ✔
- [x] c. TCP's reliable data transfer scheme usually uses cumulative ACKs; ✔
- [x] d. TCP creates a reliable data transfer service on top of IP's unreliable best-effort service; ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **1.33/2.00**.

Question **40**

Correct

Mark 2.00 out of 2.00

Which of the following protocols typically builds on TCP:

Select one or more:

- [x] a. SMTP ✔
- [x] b. HTTP ✔
- [ ] c. DNS
- [ ] d. RIP

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **41**

Correct

Mark 1.33 out of 2.00

Which of the following might happen in a congested network?

Select one or more:

- [x] a. Packets being dropped ✔
- [x] b. Unnecessary retransmissions ✔
- [x] c. Large queueing delay ✔
- [ ] d. None of the choices

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **1.33/2.00**.

Question **42**

Correct

Mark 2.00 out of 2.00

Which of the following are used together for identifying a UDP socket:

Select one or more:

- [ ] a. Source port address
- [x] b. Destination port address ✔
- [x] c. Destination IP address ✔
- [ ] d. Source IP address

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **43**

Correct

Mark 2.00 out of 2.00

Which of the following applications have tight timing constraints?

Select one or more:

- [x] a. Virtual environments; ✔
- [ ] b. Email
- [x] c. Internet telephony; ✔
- [x] d. Teleconferencing; ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **44**

Correct

Mark 2.00 out of 2.00

Which of the following statements about HTTP are correct?

Select one or more:

- [x] a. HTTP can use non-persistent and persistent TCP connections; ✔
- [x] b. HTTP is stateless; ✔
- [ ] c. A HTTP client can only use the POST method in its request message when submitting a form;
- [x] d. HTTP is used in web-based email; ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00.

Question **45**

Correct

Mark 0.67 out of 2.00

Which of the following statements are correct:

Select one or more:

- [x] a. DNS servers are organised in a hierarchical fashion to deal with the issue of scale; ✔
- [ ] b. DNS only provides the service of hostnames to IP translation;
- [x] c. The decentralised design of DNS helps to avoid a single point of failure; ✔
- [x] d. DNS is commonly used by HTTP and SMTP; ✔

Your answer is correct.

Correct

Marks for this submission: 2.00/2.00. Accounting for previous tries, this gives **0.67/2.00**.

Information

All the questions on this page are essay questions.

Question **46**

Not answered

Marked out of 6.00

Please compare link-state routing protocols with distance-vector routing protocols regarding their message complexity, speed of convergence, and robustness.

Question **47**

Not answered

Marked out of 6.00

1. What are the main differences between UDP and TCP?
2. Why do we need both of them?

Question **48**

Not answered

Marked out of 4.00

It is said that retransmissions treat a symptom of network congestion, but not the cause of network congestion. Please give your understanding of this statement.

Question **49**

Not answered

Marked out of 4.00

Please describe briefly the main application layer protocols used in a typical Email system.

Question **50**

Not answered

Marked out of 4.00

Usually we can visit the same website by accessing either www.websitename.co.nz or websitename.co.nz; and the website has email addresses ending with @websitename.co.nz. (e.g., "www.trademe.co.nz", "trademe.co.nz", "customerservice@trademe.co.nz") Please try to explain how this works based on your understanding of DNS.

◄ Quiz: Web and HTTP (practice copy)

Jump to...