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/ [Quiz 2 \(Covers BDCN Chap 4-5 & Assignment 2, Complete prior to Lecture 5\)](#).

Started on	Sunday, September 29, 2019, 8:39 PM
State	Finished
Completed on	Sunday, September 29, 2019, 10:03 PM
Time taken	1 hour 24 mins
Grade	98.33 out of 100.00

Question **1**  
Complete  
5.00 points out of 5.00

From the following statements, select all that correctly describe sources of errors in data transmission.

Select one or more:

- ☒ a. Cross-talk, Impulse Noise, and Gaussian Noise are types of errors that can occur on both digital and analog circuits.
- ☒ b. Cross-talk occurs when a circuit erroneously picks up a signal from an outside source, such as another circuit, another wire, or another antenna.
- ☒ c. Intermodulation noise is a special type of cross-talk.
- ☒ d. Electrical media, such as twisted pair wire and coaxial cable, are more likely than are optical cable to suffer from line noise, which can cause data communication errors.
- ☐ e. In general, errors are more likely to occur in transmission through cables, than through wireless, microwave, or satellite transmissions.

Question **2**  
Complete  
5.00 points out of 5.00

Select all statements that correctly describe types of routing.

Select one or more:

- ☒ a. One disadvantage of dynamic routing compared to static routing is that routers need to dedicate more computing resources to update their routing tables.
- ☒ b. One advantage of dynamic routing is that the routing decisions are continuously updated to reflect the changing network conditions with the goal of selecting the best route in the network.
- ☐ c. Static routing is a type of centralized routing, because the routes are manually defined by a network manager from a central management point in the network.
- ☐ d. Link state routing protocols make routing decisions based only on the speed of the circuit of each route that exists in a network.
- ☐ e. If the route defined between two routers that use static routing fails, the routers automatically revert to dynamic routing in order to build a new route between the routers.

Question **3**  
Complete  
5.00 points out of 5.00

From the following statements, select all that correctly describe Synchronous transmission.

Select one or more:

- ☒ a. Ethernet is a synchronous transmission protocol that is commonly used in local area networks (LANs).
- ☒ b. With Synchronous transmission, when used on a multipoint circuit, each frame must include a destination and a source address.
- ☒ c. Using Synchronous transmission, data is transmitted in blocks called frames.
- ☐ d. With synchronous transmission, data is only transmitted as characters, and each character is transmitted independently each with start and stop bits to indicate the beginning and end of the character.
- ☐ e. Synchronous transmission can only be used on multipoint circuits.

Question **4**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe error detection in data transmissions.

Select one or more:

- ☒ a. If two bits are switched during transmission, parity checking will not detect that error.
- ☒ b. Error detection for a network protocol is typically implemented by including overhead containing extra data in each protocol data unit.
- ☒ c. A checksum is typically 1 byte of overhead added to the end of a message.
- ☐ d. With Cyclic Redundancy Check (CRC) error detection, the probability of detecting an error is 100% for all errors where the number of bits affected is greater than the number of overhead bits added to the message.
- ☐ e. Parity checking is commonly used in networks today for error detection, because of its high error-detection rate.

Question **5**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe routing protocols.

Select one or more:

- ☒ a. An autonomous system is a network operated by one organization.
- ☒ b. The routing protocols used inside an autonomous system are known as interior routing protocols.
- ☒ c. Intermediate System to Intermediate System (IS-IS) is a link state interior routing protocol.
- ☐ d. The best routing protocols determine all possible routes in a given network irrespective of the size of the network.
- ☐ e. Exterior routing protocols calculate all possible routes between two autonomous systems.

Question **6**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe assigning addresses.

Select one or more:

- ☒ a. Each MAC address assigned by a network interface card (NIC) manufacturer is intended to be different from all other MAC addresses assigned by manufacturers throughout the world.
- ☒ b. A server's IPv4 address can be configured and assigned by a network engineer who creates a configuration file on that server.
- ☐ c. The address space of the IP protocol consists of 2 to the power of 24 ( $2^{24}$ ) available addresses.
- ☐ d. Each IPv4 address is assigned by a network interface card (NIC) manufacturer, and is intended to be different from all other IPv4 addresses assigned by manufacturers throughout the world.
- ☐ e. A DHCP server always assigns the same IP address to the same computer whenever that computer requests an IP address.

Question **7**

Complete

5.00 points out  
of 5.00

Imagine that all IPv4 addresses in an organization use 22-bit network identifiers. Given the following CIDR entries from the organization:

99.222.31.15/22  
99.222.27.18/22  
99.222.28.240/22  
99.223.31.15/22

and the following IPv4 address in binary, which also has a 22-bit network identifier:

01100011 11011110 00011001 00001110

Select all statements that correctly describe which addresses are on the same network.

Select one or more:

- ☒ a. 99.222.27.18/22 is on the same network as IPv4 address 01100011 11011110 00011001 00001110.
- ☒ b. 99.222.31.15/22 is on the same network as 99.222.28.240/22.
- ☐ c. 99.223.31.15/22 is on the same network as IPv4 address 01100011 11011110 00011001 00001110.
- ☐ d. 99.222.31.15/22 is on the same network as 99.223.31.15/22.
- ☐ e. 99.222.28.240/22 is on the same network as IPv4 address 01100011 11011110 00011001 00001110.

Question **8**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe Media Access Control.

Select one or more:

- ☒ a. Contention is a method of Media Access control where devices wait until the circuit is free (no other devices are transmitting) before they transmit data over the circuit.
- ☒ b. Media Access control is important in multipoint circuits where several computers share the same circuit.
- ☒ c. Collision detection is an important part of some protocols' media access control.
- ☐ d. Media Access Control is never useful on any point-to-point configuration.
- ☐ e. The only approach to Media Access Control is controlled access, which controls the circuit and determines which devices can transmit at what time.

Question **9**

Complete

5.00 points out  
of 5.00

Imagine that two computers named Computer A and Computer B have only one network adapter each, and that both are connected to the same network. Further imagine that Computer A's IPv4 configuration is represented by the CIDR entry 25.242.251.45/22, and that Computer B's IPv4 configuration is represented by the CIDR entry of 25.242.252.102/24. Select all true statements about this scenario.

Select one or more:

- ☒ a. Computer B's network identifier in binary is 000110011111001011111100.
- ☒ b. Computer A's network identifier in binary is 0001100111110010111110.
- ☒ c. Computer B's network address in dotted decimal notation is 25.242.252.0.
- ☐ d. Computer B's network identifier in binary is 000110011111001011111110.
- ☐ e. Computer A's network address in dotted decimal notation is 25.242.251.0.

Question **10**

Complete

5.00 points out  
of 5.00

From the options listed below, select all that correct errors by identifying errors and retransmitting the data.

Select one or more:

- ☒ a. Automatic Repeat Request (ARQ)
- ☐ b. Ethernet
- ☐ c. Routing Information Protocol (RIP)
- ☐ d. Repetition
- ☐ e. IPv4

Question **11**

Complete

5.00 points out of 5.00

From the following statements, select all that correctly describe asynchronous transmission.

Select one or more:

- ☒ a. The purpose of the start bit in an asynchronous transmission protocol is to assist the receiver in recognizing an incoming character.
- ☒ b. If each character in an asynchronous transmission protocol is encoded with 8 bits, one parity bit is used for error detection of that character, and one start and one stop bit is used to demarcate the character, then 11 bits per character would be transmitted using that protocol.
- ☒ c. Asynchronous transmissions can be sent at irregular time intervals.
- ☐ d. Asynchronous transmission protocols are always more efficient than synchronous transmission protocols.
- ☐ e. With asynchronous transmission, the value of the start bit preceding a character and the value of the stop bit following a character must always be the same.

Question **12**

Complete

5.00 points out of 5.00

Imagine that two computers named Computer A and Computer B have only one network adapter each, and that both are connected to the same network. Further imagine that Computer A's IPv4 configuration is represented by the CIDR entry 23.239.112.201/19, and that Computer B's IPv4 configuration is represented by the CIDR entry of 23.239.128.105/22. Select all true statements about this scenario.

Select one or more:

- ☒ a. Computer B's subnet mask in dotted decimal notation is 255.255.252.0.
- ☒ b. Computer A's subnet mask in dotted decimal notation is 255.255.224.0.
- ☒ c. Computer A's subnet mask in binary notation is 11111111.11111111.11100000.00000000
- ☐ d. Computer A's subnet mask in binary notation is 00000000.00000000.00011111.11111111
- ☐ e. Computer B's subnet mask in dotted decimal notation is 255.255.97.0.

Question **13**

Complete

5.00 points out of 5.00

An organization has developed an application that enables its employees to collaborate in the organization's local area network which is a Gigabit Ethernet network. The application generates packets that are sent using TCP/IP over Ethernet. The length of each message generated by the application itself is 154 bytes. Select all statements that correctly define the transmission efficiency and effective data rate of the application described in the scenario. For this scenario, you may assume that the header size for TCP is 20 bytes, IP is 20 bytes, and Ethernet is 26 bytes.

Select one or more:

- ☒ a. The transmission efficiency is equal to 70%.
- ☒ b. The effective data rate is equal to 700Mbps.
- ☐ c. The effective data rate is equal to 800Mbps.
- ☐ d. The effective data rate is equal to 1Gbps.
- ☐ e. The transmission efficiency is equal to 80%.

Question **14**

Complete

5.00 points out of 5.00

From the following statements, select all that correctly describe routing protocols.

Select one or more:

- ☒ a. When routers are configured to use a routing protocol, those routers exchange information with each other to help determine the best routes.
- ☒ b. An exterior routing protocol is a routing protocol that is used to exchange routing information between routers that connect autonomous systems.
- ☐ c. Routing Information Protocol (RIP) is best suited for large networks that have many possible routes.
- ☐ d. The Border Gateway Protocol (BGP) can only be used as an interior routing protocol used inside autonomous systems on the Internet.
- ☐ e. If two autonomous systems communicate with each other via border routers, then both autonomous systems must use the same interior routing protocol.



Question **15**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe error prevention.

Select one or more:

- ☒ a. Repeaters repeat digital signals to combat attenuation without amplifying the white noise on the circuit.
- ☒ b. Shielding cables or moving cables away from power sources may reduce impulse noise.
- ☒ c. The distance between two consecutive amplifiers depends on the amount of power loss per unit length of distance on the circuit.
- ☐ d. An amplifier used to combat signal attenuation can amplify an analog signal without amplifying the white noise that exists on the circuit.
- ☐ e. White noise can be entirely avoided only if the signal strength is significantly increased.

Question **16**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe the Transmission Control Protocol (TCP).

Select one or more:

- ☒ a. A sender may have many active TCP connections with the same receiver at the same time.
- ☒ b. TCP segments contain the source and destination port identifier.
- ☒ c. TCP segments contain a sequence number used to assemble segments into the correct order.
- ☐ d. TCP checks for out-of-order messages, but not for lost messages.
- ☐ e. While many Transport Layer protocols exist in theory, all modern applications only use TCP.

Question **17**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe server name resolution and the Domain Name Service (DNS).

Select one or more:

- ☒ a. Server name resolution is the process of translating application layer addresses into network addresses.
- ☒ b. The server name resolution process involves sending a DNS request to a DNS server.
- ☐ c. Sending a single DNS request to one DNS server is always sufficient to successfully perform server name resolution.
- ☐ d. The server name resolution process takes equal time to complete irrespective of the application layer address that needs to be resolved.
- ☐ e. Server name resolution is the process of translating application layer addresses into data link layer addresses.

Question **18**

Complete

5.00 points out  
of 5.00

From the following statements, select all that correctly describe the Internet Protocols IPv4 and IPv6.

Select one or more:

- ☒ a. The Internet version 4 (IPv4) has theoretical maximum of roughly  $2^{32}$  (2 to the power of 32) addresses.
- ☒ b. IPv6 addresses are commonly represented in hexadecimal (base 16).
- ☒ c. IPv6 addresses are 128 bits in length, while IPv4 addresses are 32-bits in length.
- ☐ d. IPv4 and IPv6 are data-link layer protocols.
- ☐ e. All IPv6 addresses can be used without modification on all IPv4 networks.

Question **19**

Complete

3.33 points out  
of 5.00

ComputerA and ComputerB are located on the same subnet in an organization's TCP/IP local area network (LAN). ComputerA needs to send a message to ComputerB. ComputerA knows ComputerB's IP address, but does not know ComputerB's MAC address.

Select one or more:

- ☒ a. Before sending a message to ComputerB, ComputerA must first issue an ARP broadcast to obtain ComputerB's MAC address.
- ☒ b. After ComputerA learns ComputerB's MAC address, the MAC address is stored in ComputerA's address table for future use.
- ☐ c. ARP packets used in this scenario are sent at the application layer.
- ☐ d. ComputerA can send a message directly to ComputerB without knowing ComputerB's MAC address.
- ☒ e. Before sending a message to ComputerB, ComputerA sends an ARP request only to a router, and the router responds with ComputerB's MAC address.

Question **20**

Complete

5.00 points out  
of 5.00

MusicServer is server software hosted in California that allows for the download of music over the Internet. MusicServer requires the use of TCP over IP, and its port address is 5678. MusicServer can be accessed via MusicClient, a desktop client application. Bob is an avid music fan living in New York, and uses CoolClient to make a connection to MusicServer. Bob's operating system assigns port 9989 to MusicClient for the connection. From the following statements, select all that correctly describe the given scenario.

Select one or more:

- ☒ a. MusicClient's messages to MusicServer are segmented at the transport layer, and the length of each segment is determined by TCP, which attempts to create a length of segment suitable for both IP and the data-link layer between MusicClient and MusicServer.
- ☒ b. Messages originating from MusicClient over the connection must be encapsulated in a TCP segment whose destination port address is 5678 and whose source address is 9989.
- ☐ c. MusicServer may make use of two IP addresses by designating one address for incoming messages and another for outgoing messages, thus eliminating the need to use TCP ports on the connection.
- ☐ d. Messages originating from MusicClient over the connection must be encapsulated in a TCP segment whose destination port address is 5678 and whose source address is 5678.
- ☐ e. Once the connection is established, MusicServer can send response messages to MusicClient via the data link layer, avoiding the need for segmentation by TCP.

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