CONTESTANT ID# _____

Time_____

Rank_____

COMPUTER NETWORK TECHNOLOGY
(40)

Regional 2013

TOTAL POINTS _____ (500)

Failure to adhere to any of the following rules will result in disqualification:

1. ***Contestant must hand in this test booklet and all printouts. Failure to do so will result in disqualification.***
2. ***No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.***
3. ***Electronic devices will be monitored according to ACT standards.***

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Which of the following statements describes the process of data encapsulation?

a. Protocols perform data encapsulation when they add specific codes within the datagram that are used for error checking.

b. Protocols perform data encapsulation when they embed protocol identification information within the datagram.

c. Protocols within the stack perform data encapsulation by adding a header—and, in some cases, a footer—to the information received from an upper-layer protocol.

d. Data encapsulation is the process of including only the user data in a packet.

____ 2. Identify the layer of the Open Systems Interconnection (OSI) model that controls the transmission, reception, and addressing of frames. Also identify the channel access method that Ethernet uses.

a. Physical layer; Carrier Sense Multiple Access with Collision Detection (CSMA/CD)

b. Data-link layer; token passing

c. Physical layer; token passing

d. Data-link layer; Carrier Sense Multiple Access with Collision Detection (CSMA/CD)

____ 3. You are a software developer. You have the task of creating an application that provides guaranteed delivery of information between end system applications. What layer of the Open Systems Interconnection (OSI) model and what type of protocol must you implement?

a. Data-link layer; connectionless

b. Network layer; connection-oriented

c. Transport layer; connection-oriented

d. Application layer; connection-oriented

____ 4. Which type of cable and connector is used to attach a television set to a cable television (CATV) network?

a. A fiber-optic cable and a Straight Tip (ST) connector

b. A coaxial cable and a Bayonet-Neill-Concelman (BNC) connector

c. A twisted-pair cable and an RJ-45 connector

d. A coaxial cable and an F-type connector

e. An AUI cable and a vampire tap connector

____ 5. What purpose do the twists serve in twisted-pair cabling?

a. They prevent collisions.

b. They completely eliminate crosstalk from adjacent pairs and electromagnetic interference (EMI).

c. They prevent crosstalk from adjacent pairs and limit the effects that EMI has on the signal being carried over the cable.

d. They extend the bend radius allowance of the cable.

____ 6. What type of tool do you use to connect bulk cable runs to wall plates and patch panels?

a. A crimper

b. A splicer

c. A pigtail

d. A punchdown block tool

____ 7. You have been hired by a corporation to install cabling to connect two existing networks. The two networks are in different buildings approximately 1,000 meters apart. The cable type must support Fast Ethernet data rates of 100 megabits per second (Mbps) and provide a high level of resistance to electromagnetic interference (EMI). Your client wants the most economical cabling solution that meets the corporation's needs. What cable type best meets the needs of this corporation?

a. Multimode fiber-optic cable

b. Shielded twisted-pair (STP)

c. Unshielded twisted-pair (UTP)

d. Thin coaxial cable

e. Singlemode fiber-optic cable

____ 8. Which of the following topologies is not used in local area networks (LANs)?

a. Bus

b. Star

c. Mesh

d. Ring

____ 9. Which of the following topologies is configured in a linear fashion, allowing the signal to travel in two directions simultaneously?

a. Bus

b. Star

c. Full mesh

d. Wireless

e. Ring

____ 10. Which communication method requires separate channels for simultaneously transmitting and receiving data without collisions?

a. Half-duplex

b. Full-duplex

c. Biplex

d. Dual channel

____ 11. What is the main function of the Media Access Control (MAC) mechanism?

a. To convert hexadecimal data to binary

b. To provide a common data frame to communicating systems

c. To perform error detection and correct segment errors

d. To regulate access to the network medium

____ 12. What network interface adapter feature enables you to power up a computer remotely?

a. Remote initialize

b. Wake on LAN

c. Boot on LAN

d. LAN remote boot

____ 13. You have a network that consists of three virtual local area networks (VLANs) defined on all of the switches within the network. VLAN 10 is the Sales VLAN, VLAN 20 is the Marketing VLAN, and VLAN 30 is the Accounting VLAN. Users complain that they can't communicate with anyone outside of their own VLAN. What is the problem, and what must you do?

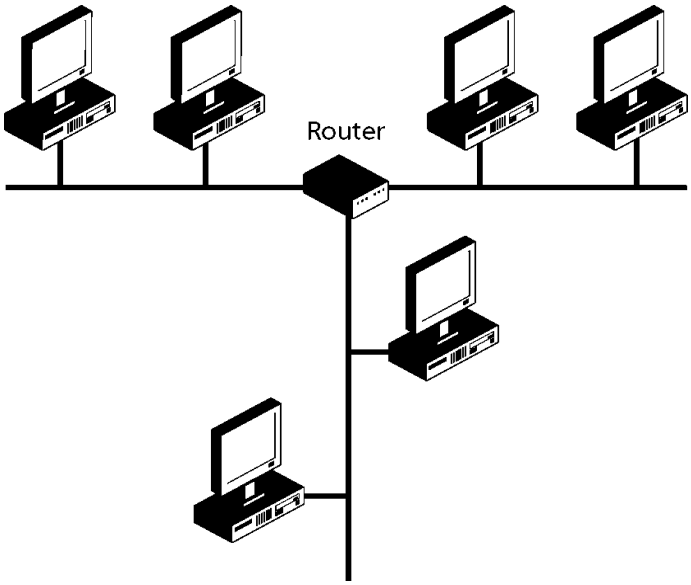
a. The problem is a faulty VLAN configuration on one of the switches. You need to re-create the VLANs and configure each VLAN for routing.

b. One of the VLANs is configured to filter all other VLAN traffic for security purposes. You need to change the filter on this VLAN.

c. VLANs are limited to data-link layer communication only. To allow communication between VLANs, you must add a router or Layer 3 switch to the network and configure it to route between the VLANs.

d. The VLANs are using different data-link layer protocols. VLANs must use the same data-link layer protocol in order to communicate.

____ 14. Review the following illustration. How many collision domains and broadcast domains exist in the network diagram?



a. There are three collision domains and three broadcast domains.

b. There are one collision domain and three broadcast domains.

c. There are one broadcast domain and three collision domains.

d. There are no collision domains and only one broadcast domain.

____ 15. Which of the following statements about bridges and switches is true?

a. They are network layer devices that use logical addressing to forward frames.

b. They are data-link layer devices that use Media Access Control (MAC) addresses to forward frames.

c. They build their internal tables based on destination address and forward packets based on source address.

d. They must support the network layer protocol implemented on the local area network. (LAN).

e. Each port defines a separate broadcast domain.

____ 16. Which of the following sublayers is defined in the Institute of Electrical and Electronics Engineers (IEEE) 802.2 standard?

a. Media specifications

b. Media Access Control (MAC)

c. Logical Link Control (LLC)

d. Physical signaling

____ 17. What is the maximum legal frame size for Ethernet?

a. 60 bytes

b. 64 bytes

c. 1500 bytes

d. 1518 bytes

____ 18. What term best describes the alternating clocking pattern of 1s and 0s sent prior to frame transmission?

a. Signal clocking

b. Frame clocking sequence

c. Preamble

d. Frame clock

____ 19. Hardware addresses with 6 bytes are divided into two parts. Each part is 3 bytes in length. Which of the following statements describes these values?

a. The first 3 bytes of a Media Access Control (MAC) address contain the organizationally unique identifier (OUI), and the second 3 bytes must be the same for all devices on the network.

b. The first 3 bytes of a Media Access Control (MAC) address must be unique, and the second 3 bytes must be the same for all devices on the network.

c. The first 3 bytes of a Media Access Control (MAC) address contain the organizationally unique identifier (OUI), and the second 3 bytes must be unique for each device on the network.

d. The first 3 bytes of a Media Access Control (MAC) address is assigned by the manufacturer, and the second 3 bytes must be unique for all devices on the network.

____ 20. Which of the following 10 Gigabit Ethernet specifications calls for the use of copper cable?

a. 10GBase-LR

b. 10GBase-CX4

c. 10GBase-ER

d. 10GBase-LX4

e. 10GBase-SR

____ 21. You have been hired to design a company's network. The company has an assigned Class C network address of 192.168.30.0. Your client wants the network to be configured with 8 subnets with 14 hosts each. Will this configuration work, and, if so, how many subnets and hosts can be on the network?

a. Yes, this will work. The network will have 14 hosts per subnet and more than 8 subnets for future growth. Four bits will be used for hosts for a total of 14. The last 4 bits will be used to get a total of 14 subnets.

b. No, this will not work. There are not enough bits to have 8 subnets with 14 hosts per subnet.

c. No, this will not work. Although you have enough bits to have 8 subnets, there are not enough bits left over to allow for 14 hosts per subnet.

d. Yes, this will work. The company can have 14 hosts per subnet and 8 subnets. Five bits will be used for hosts for a total of 14. The last 3 bits will be used to get a total of 8 subnets.

____ 22. You have been hired to design a company's Internet Protocol (IP) addressing scheme. The company has an assigned Class C network address of 192.168.30.0. Your client wants 4 subnets with 28 hosts per subnet. How many bits are required for subnets? How many bits are required for hosts? What will the new mask be for this network?

a. 3 subnet bits, 5 host bits, and mask 255.255.255.240

b. 4 subnet bits, 3 host bits, and mask 255.255.255.248

c. 3 subnet bits, 5 host bits, and mask 255.255.255.224

d. 5 subnet bits, 3 host bits, and mask 255.255.255.192

____ 23. If you have a Class B network with an Internet Protocol (IP) address of 172.16.168.2 and a mask of 255.255.240.0, what is the network address of the subnet to which the IP address belongs?

a. 172.16.32.0

b. 172.16.192.0

c. 172.16.168.0

d. 172.16.160.0

____ 24. What term describes a unit of data at the transport layer?

a. Segment

b. Frame

c. Bit

d. Datagram

____ 25. When you are analyzing captured Transmission Control Protocol/Internet Protocol (TCP/IP) packets, which of the following control bits must you look for in the Transmission Control Protocol (TCP) header to determine whether the receiving host has successfully received the sending host's data?

a. The ACK bit

b. The URG bit

c. The PSH bit

d. The SYN bit

e. The FIN bit

____ 26. What is the valid range for well-known Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) server ports?

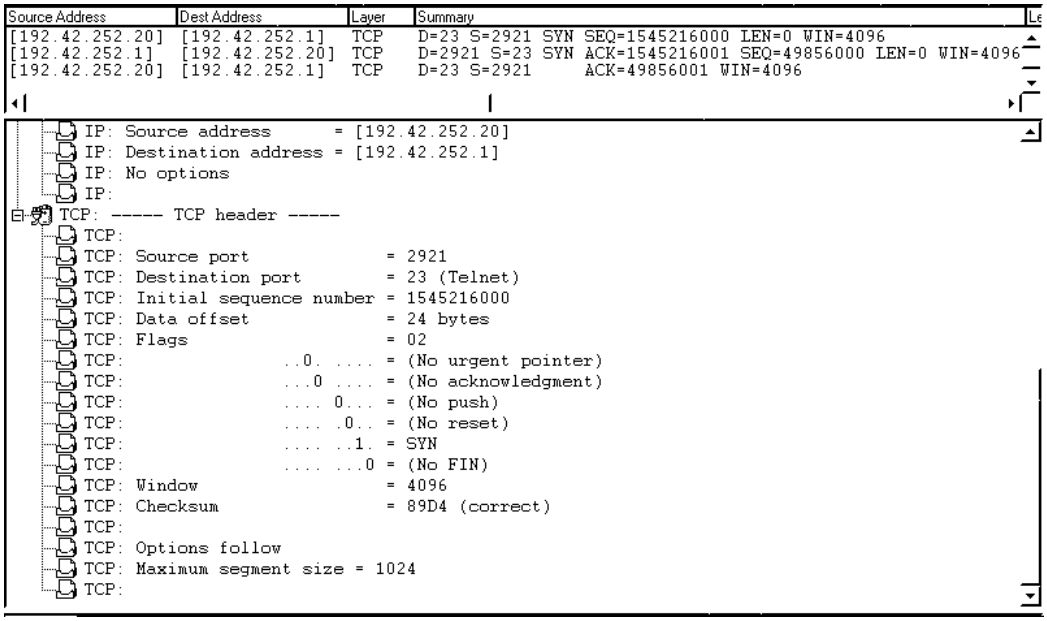
a. 1023 through 65534

b. 1 through 1024

c. 1024 through 65534

d. 1 through 1023

____ 27. Review the following illustration. What are the starting sequence number and window size advertised by the source host 192.42.252.20?



a. 2921 and 1024

b. 2921 and 4096

c. 1545216000 and 1024

d. 49856000 and 4096

e. 1545216000 and 4096

____ 28. Which of the following protocols resolves a logical network layer Internet Protocol (IP) address to a Media Access Control (MAC) address?

a. Internet Control Message Protocol (ICMP)

b. Internet Group Management Protocol (IGMP)

c. IP

d. Address Resolution Protocol (ARP)

____ 29. Internet Control Message Protocol (ICMP) and Address Resolution Protocol (ARP) function at what layer of the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite?

a. Application

b. Transport

c. Internet

d. Network Access

____ 30. Which of the following protocols resolves host names to Internet Protocol (IP) addresses?

a. Dynamic Host Configuration Protocol (DHCP)

b. Domain Name System (DNS)

c. Address Resolution Protocol (ARP)

d. File Transfer Protocol (FTP)

____ 31. Which version of Microsoft Windows Server 2003 is designed specifically for use as an Internet server and supports up to 2 gigabytes (GB) of memory and two processors?

a. Business

b. Home

c. Professional

d. Enterprise

e. Web

____ 32. What is the native file sharing protocol used on all Microsoft Windows operating systems?

a. NetWare Core Protocol (NCP)

b. Network File System (NFS)

c. Samba

d. Server Message Block (SMB)

e. Apple Filing Protocol (AFP)

____ 33. What is the native file sharing protocol used on UNIX/Linux systems?

a. NetWare Core Protocol (NCP)

b. Network File System (NFS)

c. Samba

d. Server Message Block (SMB)

e. Apple Filing Protocol (AFP)

____ 34. Which Internet Protocol (IP) address allocation method is not supported by Dynamic Host Configuration Protocol (DHCP)?

a. Manual

b. Dynamic

c. Stable

d. Automatic

____ 35. Which of the following features of Novell NetWare 6.5 is used to authenticate users and control access to the network?

a. Active Directory

b. Bindery

c. eDirectory

d. NWHost database

____ 36. Which of the following is not a mechanism used to resolve Network Basic Input/Output System (NetBIOS) host names to Internet Protocol (IP) addresses?

a. NetBIOS broadcasts

b. Lmhosts file

c. Hosts file

d. Windows Internet Naming Service (WINS)

____ 37. Which of the following security mechanisms prevents unauthorized network access through the Internet and isolates local LAN-to-LAN access within a private network?

a. IP Security (IPSec)

b. Encapsulating Security Payload (ESP)

c. A firewall

d. A storage area network (SAN)

____ 38. What redundant array of independent disks (RAID) level increases the speed of write requests by writing data to multiple disks but does not provide any fault tolerance against disk failures?

a. 0

b. 1

c. 2

d. 5

e. 10

____ 39. What data storage technology consists of a drive array with an embedded operating system that connects directly to a local area network (LAN)?

a. DAS

b. NAS

c. NAD

d. OSD

____ 40. Your company wants to implement a firewall on its Internet gateway that can be configured to permit or deny traffic based on Media Access Control (MAC) and network layer addresses, protocols, and ports. In addition, it wants to be able to detect and prevent Internet Protocol (IP) spoofing, SYN floods, and teardrop attacks. Which of the following best meets their needs?

a. A packet filtering firewall

b. Network Address Translation (NAT)

c. A proxy server

d. A stateful packet filtering firewall

____ 41. Which of the following remote access technologies converts digital signals generated by a computer to analog signals that can be carried over standard telephone wires?

a. Modem-to-modem

b. Integrated Services Digital Network (ISDN)

c. Digital Subscriber Line (DSL)

d. Cable television (CATV)

____ 42. Which of the following wide area network (WAN) connection types uses analog signaling and is limited to transmission speeds of 33.6 kilobits per second (Kbps) upstream and 56 Kbps downstream?

a. Public Switched Telephone Network (PSTN)

b. Integrated Services Digital Network (ISDN)

c. Digital Subscriber Line (DSL)

d. Cable television (CATV)

____ 43. Which wide area network (WAN) technology is referred to as 2B+D?

a. Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI)

b. Digital Subscriber Line (DSL)

c. Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI)

d. T-1

____ 44. Why does digital subscriber line (DSL) technology support faster data transmissions than a standard Public Switched Telephone Network (PSTN) modem connection?

a. It uses a separate control circuit that provides clear channels for data.

b. It does not perform cyclical redundancy check (CRC) functions and, therefore, has less overhead.

c. It performs only a single analog-to-digital conversion.

d. It uses a higher frequency range.

____ 45. If you want to allow both voice and data traffic to be transmitted across the same digital subscriber line (DSL) connection, what type of device is required at the customer site?

a. A signal terminator

b. Digital Subscriber Line Access Multiplexer (DSLAM)

c. A coder/decoder (CODEC) device

d. A splitter

____ 46. What troubleshooting tool allows you to copy all traffic traversing a network to a buffer, interpret protocols, and display the output?

a. Event Viewer

b. Traffic monitor

c. Protocol analyzer

d. Management console

____ 47. A single user suddenly can't connect to any hosts on the network (local or remote). You interview the user and find that he made some changes to his computer's Internet Protocol (IP) configuration properties. What should you do next?

a. Run the Winipcfg or Ipconfig command to view the local configuration.

b. Check the Domain Name System (DNS) server to see if it is resolving IP host names.

c. Check the Windows Internet Naming Service (WINS) server to see if it is resolving Network Basic Input/Output System (NetBIOS) names.

d. Verify that the router is functioning.

____ 48. Which of the following are examples of data-link layer protocols? (Choose all answers that are correct.)
1. Ethernet
2. UDP
3. Token Ring
4. IP

a. 1 and 3

b. 1 and 2

c. 2 and 3

d. 1 and 4

____ 49. The link light on a NIC and the corresponding light on a switch are not lit.What action should be taken first?

a. Replace the switch

b. Replace the cable between the switch and NIC

c. Replace the NIC

d. Insert the cable into another switch port.

____ 50. A baseband network can carry only one signal at a time.

a. TRUE

b. FALSE