Chapter 01: Introduction to Computer Networks

True / False

1. A network that has locations in different countries is considered a WAN.
   a. True
   b. False

   ANSWER: True

2. In order to find out your MAC address, you should open a command prompt and type ipconfig /all.
   a. True
   b. False

   ANSWER: True

3. What makes a computer a "server" is the fact that it has a server operating system installed on it.
   a. True
   b. False

   ANSWER: True

4. Each component of a computer is designed to perform only one specific task-either input, processing, or output.
   a. True
   b. False

   ANSWER: False

5. An extranet is a private network, such as a school or company network, in which the devices and servers are available only to users connected to the internal network.
   a. True
   b. False

   ANSWER: False

Multiple Choice

6. The XYZ company has two offices, one in Chicago, and a brand new office in Pittsburgh. To connect the two offices, they will need a dedicated line, probably leased from the phone company. What type of network will they be implementing to connect their two offices?
   a. LAN
   b. WAN
   c. PAN
   d. SAN

   ANSWER: b

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7. Air waves are an example of what type of network component?
   a. Network Interface Card
   b. network medium
   c. interconnecting device
   d. network protocol

   ANSWER: b

8. Windows 7 and Windows 10 are examples of which of the following?
   a. network protocols
   b. client operating systems
   c. server software
   d. server operating systems

   ANSWER: b

9. What is one of the disadvantages of a peer-to-peer network compared to a server-based network?
   a. more difficult to setup and install
   b. more expensive
   c. higher administration costs
   d. limited security

   ANSWER: d

10. What command would you issue from a command prompt to see a listing of the computers in your workgroup?
    a. arp -a
    b. net view
    c. ipconfig /all
    d. ping

    ANSWER: b

11. What is one of the disadvantages of a server-based network compared to a peer-to-peer network?
    a. additional costs
    b. decentralized data access
    c. difficult to expand
    d. less secure

    ANSWER: a

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12. Which component manages the details of communicating with the NIC hardware to send and receive data to and from network media?
    a. client
    b. network interface
    c. network protocol
    d. device driver

    ANSWER: d

13. When data is being prepared for transmission onto the network, it is broken into small pieces and a header and trailer are added to each piece to help identify it. What is this process called?
    a. multitasking
    b. verification
    c. encapsulation
    d. application

    ANSWER: c

14. Every NIC has a unique address that consists of a 12-digit hexadecimal value. What is this address called?
    a. IP address
    b. subnet mask
    c. MAC address
    d. default gateway

    ANSWER: c

15. Using the physical mail analogy, what part of an address on an envelope is most like the IP address?
    a. MAC address
    b. Street address
    c. Recipient name
    d. Zip code

    ANSWER: d

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16. You are building a gaming computer and you want to install a dedicated graphics card that has a fast GPU and 1GB of memory onboard. You need to make sure that you have the right connector available on your motherboard. What type of connector would be appropriate?

    a. PCI

    b. SATA

    c. PCI-Express

    d. IDE

    ANSWER: c

17. You want a fast CPU for the new computer you are building and your motherboard only has one CPU socket. To increase the processing power, you need a CPU that provides more than one processor. What is this CPU called?

    a. multicore

    b. multiple

    c. multifaceted

    d. multilink

    ANSWER: a

18. Which component, located on the motherboard, carries out all the instructions provided by computer programs?

    a. hard drive

    b. RAM

    c. NIC

    d. CPU

    ANSWER: d

19. You are the network administrator for a company and you want to separate the traffic from the accounting department from the rest of the network. However, the accounting department still needs to have access to other network resources. What type of network do you need to implement?

    a. WPAN

    b. internetwork

    c. WAN

    d. wireless network

    ANSWER: b

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20. Which part of the network communication process is responsible for sending and receiving data to and from the network media?
   a. network software
   b. network protocol
   c. user application
   d. network interface

   ANSWER: d

21. You're the network administrator for a company located in Arizona that has just opened an office in Texas. You need to make sure that the two locations can communicate. What type of network are you implementing?
   a. MAN
   b. WAN
   c. internetwork
   d. extended LAN

   ANSWER: b

22. You have just started a new business. You need to have three to four workstations available for your employees who simply need to share some files and a printer, but you don't have a large budget. Security is not a major concern, but costs are. What type of network would be the most appropriate for your situation?
   a. internetwork
   b. domain
   c. peer-to-peer network
   d. server-based network

   ANSWER: c

Multiple Response

23. Which of the following are examples of output devices? (Choose all that apply.)
   a. monitor
   b. printer
   c. keyboard
   d. speakers
   e. CPU

   ANSWER: a, b, d

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24. Which of the following are examples of input devices? (Choose all that apply.)

    a. mouse

    b. monitor

    c. keyboard

    d. scanner

    e. printer

    ANSWER: a, c, d

Completion

25. The three basic functions of a computer are input, _____, and output.

    ANSWER: processing

26. _____ components include devices such as printers, disk drives, network cards, and monitors.

    ANSWER: Output

27. A _____ is a packet that has been encapsulated with the source and destination MAC addresses in the header and an error-checking code in the trailer.

    ANSWER: frame

28. There are two different network models. One of them, a peer-to-peer network, also is referred to as a _____ network.

    ANSWER: workgroup

29. A _____ is a collection of users and computers whose accounts are managed by Windows servers called domain controllers.

    ANSWER: domain

30. Before data is transmitted, it is broken into chunks of data and then encapsulated with the source and destination IP addresses to create a _____.

    ANSWER: packet

Matching

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Match each item with a statement below:

a. server

b. network protocols

c. domain

d. LAN

e. header

f. packet

g. WAN

h. peer-to-peer network

i. internetwork

j. core

31. a networked collection of LANs tied together by devices such as routers

   ANSWER: i

32. information added to the front end of a chunk of data

   ANSWER: e

33. the term used to describe an OS designed mainly to share network resources

   ANSWER: a

34. a collection of users and computers in a server-based network

   ANSWER: c

35. network that connects devices in a small geographic area

   ANSWER: d

36. a chunk of data with source and destination IP addresses

   ANSWER: f

37. network that is geographically dispersed

   ANSWER: g

38. an instance of a processor inside a single CPU chip

   ANSWER: j

39. a network model in which all computers can function as clients or servers as needed

   ANSWER: h

40. the software defining the rules and formats a computer must use when sending information across the network

   ANSWER: b

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Subjective Short Answer

41. Judy has just sent a ping message from her computer to John's computer using John's computer's IP address to verify that she has connectivity. List the steps that the message takes to get to the other computer and what layer of the network communication process each step relates to.

    ANSWER: First, Judy opens a command prompt and types the command "ping 192.168.0.10". This is the user application layer. The next step is for Judy's computer to create the ping message to send to John's computer. This is the network software layer. The ping message then is encapsulated with the IP addresses of both Judy's computer and John's, which are the source and destination IP addresses. At this step, Judy's computer also finds out what the MAC address of John's computer is, which will be the destination MAC address. Both of these steps are part of the network protocol layer. Finally, Judy's computer adds her MAC address and John's MAC address (source and destination MAC addresses) to the package, converts the message into bits, and sends it to the network medium. This is the network interface step.

42. What is the difference between short-term storage and long-term storage?

    ANSWER: Data that is stored in short-term storage is erased when the computer is powered off. When the computer is turned back on, there is no trace of any previous data. The computer transfers programs and files into this short-term storage to make it readily available for the CPU. Long-term storage retains its data even when no power is applied to the computer. Long-term storage is where programs and files are stored.

43. How do you access the BIOS setup utility?

    ANSWER: Turn your computer on and watch the first screen that appears carefully as it will have a message. This message will tell you what key to press to enter the BIOS. When you know what key to press, do so quickly. If you do not press the key in time, the computer will continue to boot. After it boots, shut down the computer and try again.

44. What is the difference between a LAN and a WAN?

    ANSWER: A LAN is a group of computers connected by a network device, such as a hub or switch, that is located in a small area, such as an office building. LAN connections usually have high data transfer rates and use UTP cabling. A WAN is a network that covers a much larger area. It can be in the same state, or across several states, or across several countries. It usually connects several LANs together using high-speed, public communication links that are typically very expensive.

45. What are the three basic tasks performed by a computer?

    ANSWER: Input, processing, and output. First, it accepts input. Input can come from several different devices like a mouse, a keyboard, or storage. Input usually is generated by a user's actions, but not always. Next, the CPU processes the input, which means that it examines the input and determines or calculates the results. Finally, the CPU sends instructions to whatever device is appropriate to perform or display the output. Output devices include, but are not limited to, monitors, printers, and storage devices.

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46. What is a peer-to-peer network, and what are it's advantages and disadvantages?

ANSWER: A peer-to-peer network is a collection of computers in which each computer can act as a client or a server, or both, and each has equal authority. Advantages of a peer-to-peer network are that it is easy to install, is relatively inexpensive to implement, doesn't require extensive training or special staff, and the lose of a single machine will not cripple the network. Disadvantages include lack of security, difficult to locate resources, reduced performance when computer is acting as server, and limitation on the number of users.

47. What is a server-based network, and what are it's advantages and disadvantages?

ANSWER: A server-based network is a network that has certain computers that take on the role of servers, and all the other computers act as clients. The advantages are centralized control over network resources, better security, easy expandability, and no limitations to the number of users. The disadvantages include higher costs for equipment and software, the need for administrative personnel to maintain network resources, and the fact that a single computer could cause the entire network to fail.

48. What is the difference between a client operating system and a server operating system?

ANSWER: A client operating system is designed mainly to run user applications like a word processor or spreadsheet program and to access network resources like file servers or the Internet. A server operating system is designed to provide clients with access to network resources such as directory services, shared files, and e-mail.

49. Explain the boot procedure.

ANSWER: First, power is supplied to the motherboard. Second, the CPU starts. Third, the CPU gets the configuration information from the BIOS and carries out the startup routines, which include performing the POST. The BIOS searches the boot devices for an OS. After an OS is found, it is loaded into RAM, and finally, the OS services are started.

50. What is the difference between an intranet and an extranet?

ANSWER: An intranet is a private network, such as a school or company network, in which the devices and servers are available only to users connected to the internal network. Many of the same protocols and technologies used on the Internet are used to access information on an intranet. An extranet sits somewhere between the Internet and an intranet. It allows limited and controlled access to internal network resources by outside users. It's used when two organizations need to share resources, so controls are put in place to allow these organizations to access resources without making resources available to the wider Internet.