**Chapter 06 :** Telecommunications and Networks

**True / False Questions**

1. A change in technology often induces social, political, and economic system changes long before a critical mass of users is reached.

True False

2. The telecommunications industry has changed from a deregulated market to government-regulated monopolies.

True False

3. Middleware is an essential component of any IT infrastructure because it allows disparate systems to be isolated.

True False

4. Business-to-business electronic commerce websites can be used by businesses to establish strategic relationships with their customers and suppliers.

True False

5. The Internet has a central computer system that is the most powerful in the world.

True False

6. The Internet provides electronic discussion forums and bulletin board systems that are formed and managed by special-interest newsgroups.

True False

7. Booking a reservation over the Internet costs an airline about 50 percent less than booking the same reservation over the telephone.

True False

8. An intranet is a network inside an organization that uses Internet technologies to provide an Internet-like environment within the enterprise.

True False

9. Intranets seldom have much impact on communications and collaboration within an enterprise.

True False

10. Software that is installed on intranet Web servers can be accessed by employees within the company or by external business partners who are using Web browsers, if access is allowed by the company.

True False

11. If access to data is not restricted with passwords and other security mechanisms, the integrity of the data can be easily compromised.

True False

12. An extranet is a network inside a company that uses Internet technologies to provide a private Internet-like network environment to the firm.

True False

13. Web browser technology makes customer and supplier access of intranet resources a lot easier and faster than with previous business methods.

True False

14. A client/server network of several interconnected local area networks can replace a large mainframe-based network with many end user terminals.

True False

15. The network-centric concept views the PC as the central computing resource of any computing environment.

True False

16. In the central server architecture of P2P networking, the P2P software connects your PC to a central server with the directory of all users of the network.

True False

17. In the pure peer-to-peer architecture of P2P networking, the P2P software connects your PC to a central server with the directory of all users of the network.

True False

18. The Internet, as originally conceived in the late 1960s, was a pure peer-to-peer system.8

True False

19. The unique achievement of Napster was the empowerment of the peers, in association with a central index, to quickly and efficiently locate available content.

True False

20. Output from analog devices must be converted into digital form in order to input it into a computer.

True False

21. Today, ordinary telephone wire is the least used medium for telecommunications.

True False

22. Newly developed optical routers will be able to send optical signals up to 2,500 miles without regeneration.

True False

23. Communications satellites can use microwave radio as their telecommunications medium.

True False

24. PCS phone systems cost substantially more to operate and use than cellular systems, but have lower power consumption requirements.

True False

25. Wi-Fi is faster and less expensive than Standard Ethernet and other common wire-based LAN technologies.

True False

26. A Bluetooth chip is designed to replace cables; it takes the information normally carried by a cable and transmits it to a receiver Bluetooth chip.

True False

27. In frequency division multiplexing (FDM), a multiplexer effectively divides one high-speed channel into multiple high-speed channels.

True False

28. Multiplexers work to increase the number of transmissions possible, while also increasing the number of physical data channels.

True False

29. Telecommunications and network management software can reside in communications processors, such as multiplexers and routers.

True False

30. Mainframe-based wide area networks frequently use telecommunications monitors or teleprocessing monitors.

True False

31. The Open System Interconnection (OSI) model was officially adapted as an international standard by the International Organization of Standards (ISO).

True False

32. The Internet uses a system of telecommunications protocols that have become so widely used that they are now accepted as a network architecture.

True False

33. An IP address is expressed as four decimal numbers separated by periods, such as 127.154.95.6.

True False

34. IP addressing can identify a particular PC connected to the Internet, but not the network to which it is attached.

True False

35. Skype software allows telephone conversations through a PC and over the Internet instead of a separate phone connection.

True False

36. Each IP address is divided into three address classes, which are A, B, and C. Class C addresses are normally owned by large Internet service providers or major corporations.

True False

37. New technologies are extending IP addresses beyond computers to TVs, toasters, and coffeemakers.

True False

38. Developed to work Internet2, IPv6 increases the IP address size from 32 bits to 256 bits to support more levels of the address hierarchy.

True False

39. IPv6 supports over 300 trillion trillion trillion addresses.

True False

40. Voice over IP is a technology that allows a remote worker to function as if he or she were directly connected to a regular telephone network, even while at home or in a remote office.

True False

41. Skype users can call to any non-computer-based landline or mobile telephone in the world for just pennies a minute.

True False

42. "Bandwidth" is typically measured in characters per second (CPS).

True False

43. Narrow-band channels typically use microwave, fiber optics, or satellite transmission.

True False

44. Frame relay technology is slower than X.25 and not as well suited to handle the heavy communications traffic of interconnected local area networks.

True False

45. Although we tend to think of the FCC as the oversight body for radio and television, it is equally involved in all aspects of data and voice communications.

True False

46. Regular telephone service relies on Packet Switching, while the Internet relies on Circuit Switching.

True False

47. Packet Switching involves dividing a message into multiple packets which are transmitted over a network to the receiver.

True False

48. The Internet is owned by the government of the United States.

True False

**Multiple Choice Questions**

49. Telecommunications and network technologies are internetworking and revolutionizing \_\_\_.

1. business and society
2. business and globalization
3. society and politics
4. globalization and politics

50. Which of the following statements best defines a network?

1. The usefulness or utility that comes from linking computers together
2. An interrelated or interconnected chain, group, or system
3. Computers linked together via cabling or wireless technology
4. A group of individuals linked via hardware and software

51. A network with 100 nodes has 9,900 possible connections. A network with 1,000 nodes has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ possible connections.

1. 9,900,000
2. 999,000
3. 99,000
4. over one million

52. Metcalfe's law states that:

1. The usefulness or utility of a network equals the square of the number of users
2. More network nodes equals more usefulness to network members
3. Networks with too many nodes rapidly lose their effectiveness
4. The usefulness or utility of a network equals the number of users times the number of nodes

53. A change in technology induces social, political, and economic system changes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. long before a critical mass of users is reached.
2. before the technology is well understood.
3. only after a critical mass of users is reached.
4. when it is used as a political tool by radical countries.

54. The telecommunications industry has changed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. from a deregulated market to government-regulated monopolies.
2. not at all since 1900.
3. from government-regulated monopolies to a deregulated market.
4. none of the above.

55. Open systems are a recent telecommunications trend. Open systems:

1. Use common standards for hardware, software, applications, and networking
2. Create a computing environment that is easily accessed by end users and their networked computer systems
3. Provide greater connectivity, and a high degree of network interoperability
4. All of the choices are correct.

56. Programming that serves to "glue together" or mediate between two separate, and usually already existing, programs is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. front-line software
2. software handshaking
3. middleware
4. back-line software

57. Local and global telecommunications networks are rapidly converting to digital transmission technologies. Digital technology provides all of the following benefits over analog technology except:

1. Much lower error rates
2. Equivalent transmission speeds
3. Movement of larger amounts of information
4. Greater economy

58. Telecommunications networks now play vital and pervasive roles in Web-enabled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. e-business processes
2. electronic commerce
3. enterprise collaboration
4. All of the choices are correct.

59. Which of the following statements regarding Internet2 is true?

1. Internet2, like the first Internet, is open to all users
2. Internet2 uses the same infrastructure as the current Internet, so it will be easy to learn
3. The purpose of Internet2 is to build a roadmap that can be followed during the next stage of innovation for the current Internet
4. Internet2 will someday replace the original Internet

60. Most of the institutions and commercial partners on the Internet2 network are connected via \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a network backbone that will soon support throughput of 10 Gbps.

1. Abilene
2. Phoenix
3. Enterprise
4. Indiana

61. Traveling salespeople and those at regional sales offices can use the Internet, extranets, and other networks to transmit customer orders from their laptop or desktop PCs, thus breaking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ barriers.

1. physical
2. competition
3. structural
4. geographic

62. Telecommunications-based business applications can help a company overcome all of the following barriers to business success except:

1. Time barriers
2. Geographic barriers
3. Human resource barriers
4. Cost barriers

63. All of the following statements about the Internet revolution are true except:

1. The Internet has become the largest and most important network today, and has evolved into a global information superhighway
2. The central computer system of the Internet is the most powerful communications center in the world
3. The Internet is constantly expanding, as more and more businesses and other organizations join its global web
4. The Internet does not have a headquarters or governing body

64. Which of the following statements regarding Internet Service Providers is correct?

1. ISPs provide individuals and organizations with access to the Internet for a fee
2. ISPs are independent organizations; they have no connection to one another
3. ISPs are no longer necessary for access to the Internet
4. ISPs provide a direct connection between a company's networks and the Internet

65. ISPs are connected to one another through network \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. touch points
2. portals
3. access points
4. hubs

66. Which of the following is a key business use of the Internet?

1. Internet websites for interactive marketing and electronic commerce
2. E-mail, file transfer, and discussion forums
3. Intranet links with remote employee sites
4. All of the choices are correct.

67. Applications that use the Internet and Internet-based technologies are typically less expensive to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than traditional systems.

1. develop
2. operate
3. maintain
4. All of the choices are correct.

68. Most companies are building e-business and e-commerce websites to achieve all of the following goals except:

1. Generate new revenue from online sales
2. Increase foot traffic at brick and mortar locations
3. Reduce transaction costs
4. Increase the loyalty of existing customers via Web customer service and support

69. An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a network inside an organization that uses Internet technologies to provide an Internet-like environment within the enterprise.

1. extranet
2. omninet
3. intranet
4. none of the above

70. An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a network link that uses Internet technologies to interconnect the intranet of a business with the intranets of its customers, suppliers, or other business partners.

1. extranet
2. omninet
3. intranet
4. none of the above

71. The use of an intranet in an organization \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. can significantly improve communications and collaboration within an enterprise.
2. can significantly hinder communications and collaboration within an enterprise.
3. has no effect communications and collaboration within an enterprise.
4. is only possible if the organization is using WiFi.

72. All of the following would typically be supported by an organization's intranet information portal except:

1. Communication and collaboration
2. Business operations and management
3. Web publishing
4. Recruitment

73. The comparative \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of publishing and accessing multimedia business information internally via intranet websites has been one of the primary reasons for the explosive growth in the use of intranets in business.

1. attractiveness
2. lower cost
3. ease
4. All of the choices are correct.

74. Based on the information presented in the text, telecommunications terminals are best described as:

1. Any input/output device that uses telecommunications networks to transmit or receive data, including telephones
2. Devices that support data transmission and reception between terminals and computers
3. Channels over which data are transmitted and received
4. Programs that control telecommunications activities and manage the functions of telecommunications networks

75. The text lists five basic categories of components in a telecommunications network. One of these categories includes telecommunications processors, which:

1. Support data transmission and reception between terminals and computers
2. Are channels over which data are transmitted and received
3. Consist of programs that control telecommunications activities and manage the functions of telecommunications networks
4. Include input/output terminals

76. The five basic categories of components in a telecommunications network include:

1. Protocols, telecommunications channels, computers, telecommunications control software, and modems
2. Terminals, telecommunications processors, telecommunications channels, computers, and telecommunications control software
3. Terminals, telecommunications channels, computers, and modems
4. Terminals, telecommunications processors, computers, modems, and protocols

77. A network that covers a large geographic distance, such as a state or a country, is considered a \_\_\_\_\_\_\_ network.

1. client/server
2. local area
3. small area
4. wide area

78. Which of the following best describes a local area network?

1. A network that covers a large geographic area, such as a city or state
2. A network that connects computers within a limited physical area, such as inside a single building
3. A network that covers no more than a single state
4. A private network that uses the Internet as its main backbone

79. To communicate over a network, each PC usually has a circuit board called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. printed circuit card
2. modem
3. router
4. network interface card

80. All of the following statements about a virtual private network are correct except:

1. Uses the Internet as its main backbone network
2. Connects the intranets of a company's different locations, or establishes extranet links between a company and its customers, suppliers, and business partners
3. Relies on modem, twisted-pair wire, and router technology
4. Relies on network firewalls, encryption, and other security features to provide a secure network

81. All the following describe a VPN except:

1. A VPN uses the Internet as its main backbone network.
2. A VPN relies on network firewalls, encryption, and other Internet and intranet security features.
3. A VPN uses the Internet to establish secure intranets between its distant offices and locations.
4. A VPN is available for use by anyone with access to the Internet.

82. Older, traditional mainframe-based business information systems are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ systems.

1. historical
2. standard
3. legacy
4. application

83. Most Linux distributions are released via BitTorrent to help with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ needs.

1. security
2. bandwidth
3. user registration
4. file compression

84. The Internet, as originally conceived in the late 1960's was a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system.

1. client-server
2. central server
3. pure peer-to-peer
4. peer-to-peer

85. In telecommunications networks, twisted-pair wire:

1. Is the least commonly used medium
2. Facilitates mobile data communication
3. Is used for both voice and data transmission
4. Is commonly laid on the floors of lakes and oceans

86. A communications medium that consists of one or more central wires surrounded by thick insulation is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cable.

1. coaxial
2. fiber optic
3. twisted-pair
4. packet-transmission

87. Compared to coaxial cable, standard twisted-pair telephone lines:

1. Support lower data transmission speeds
2. Are virtually the same as coaxial cable in speed and service provided
3. Have less interference and distortion because of their insulation
4. None of the choices are correct.

88. Fiber optics uses cables consisting of one or more hair-thin filaments of \_\_\_\_\_\_\_\_\_\_ fiber wrapped in a protective jacket.

1. glass
2. plastic
3. ceramic
4. nylon

89. Fiber optics are regarded as the communications media of the future, primarily due to its \_\_\_\_.

1. availability
2. greater speed and capacity
3. lower installation costs
4. greater compatibility with existing communications media

90. As it relates to telecommunications media, the problem of the last mile is:

1. A low voltage drop at the end of the line
2. Tying into older technology
3. Finding the money to complete the project
4. None of the choices are correct.

91. Which of the following technologies transmits data at the fastest rate?

1. Modem
2. Cable modem
3. ISDN
4. Home satellite

92. An internetworking unit that connects networks based on different protocols is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. bridge
2. router
3. gateway
4. hub

93. In a telecommunications network, a hub is a communications processor that:

1. Connects two LANS based on the same network standards or protocols
2. Connects different communications architectures
3. Facilitates port switching
4. None of the choices are correct.

94. In a telecommunications network, a gateway is a communications processor that:

1. Is used for port switching
2. Connects different communications architectures
3. Connects two LANS based on the same network standards or protocols
4. Connects LANs to Wi-Fi networks

95. In telecommunications networks, multiplexers:

1. Convert digital signals to analog and vice versa
2. Allow a single communications channel to carry multiple simultaneous data transmissions
3. Include bridges, routers, hubs, and gateways, which interconnect a local area network with other local and wide area networks
4. Make connections between communications circuits in a network

96. Network management package functions include all of the following except:

1. Managing network resources and traffic to avoid congestion
2. Providing security
3. Informing network administrators of potential problems before they occur
4. All of the choices are functions of network management packages.

97. Security is a top concern of network management today, so telecommunications software must provide all of the following except:

1. Authentication
2. Encryption
3. Firewalls
4. Central processing

98. A network configuration that consists of a central computer system with a number of smaller computers tied directly to it, but not to each other, is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ network.

1. bus
2. ring
3. central processing
4. star

99. Which of the following best describes how star, ring, and bus networks differ?

1. Performance and reliability
2. Performance, reliability, and cost
3. Reliability and cost
4. Performance and cost

100. A(n) \_\_\_\_ is a standard set of rules and procedures for the control of communication in a network.

1. amplification
2. algorithm
3. protocols
4. transponders

101. Which one of the following statements regarding a telecommunications network is false?

1. A protocol is a standard set of rules and procedures for the control of communications in a network
2. The communications control information needed for "handshaking" between terminals and computers is a protocol
3. A protocol deals with the control of data transmission/reception in a network
4. Protocols are not applicable to hardware, such as cables and modems

102. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer in an OSI model provides communications services for end users.

1. application
2. data link
3. network
4. transport

103. In an OSI model, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer does the routing and forwarding.

1. physical
2. data link
3. network
4. application

104. When IP was first standardized, the specification required that each system attached to the Internet be assigned a unique, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Internet address value.

1. 4-bit
2. 8-bit
3. 16-bit
4. 32-bit

105. All of the following statements regarding Internet telephony are correct except:

1. It is often referred to as voice over IP or VOIP
2. It involves using an Internet connection to pass voice data using IP instead of a standard public telephone network
3. It incurs standard long-distance telephone call charges
4. It demands a very well-configured network to run smoothly

106. Communications channels such as microwave, fiber optics, or satellite transmission that provide high-speed transmission rates typically use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ channels.

1. broadband
2. narrow-band
3. wireless
4. voice-band

107. ATM (asynchronous transfer mode) is an emerging high-capacity \_\_\_\_\_\_\_\_\_\_ switching technology.

1. node
2. packet
3. cell
4. network

108. VoIP works by digitizing a voice signal, chopping it into \_\_\_\_\_\_\_\_\_\_, and then sending them over a company's computer network or the Internet, much like data or email.

1. bits
2. packets
3. characters
4. waves

109. IPv4, the current Internet addressing protocol, can accommodate about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ addresses.

1. 4 trillion
2. 4 billion
3. 4 million
4. None of the above