***Management Information Systems: Managing the Digital Firm, 16e* (Laudon)**
Chapter 7 Telecommunications, the Internet, and Wireless Technology

1) Which of the following is a device that sends packets of data through different networks assuring they go to the correct address?
A) Hub
B) Switch
C) Router
D) NIC
E) Modem
Answer: C
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

2) The Internet is based on which three key technologies?
A) TCP/IP, HTML, and HTTP
B) TCP/IP, HTTP, and packet switching
C) Client/server computing, packet switching, and the development of communications standards for linking networks and computers
D) Client/server computing, packet switching, and HTTP
E) Email, instant messaging, and newsgroups
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

3) Which of the following involves slicing digital messages into parcels, transmitting them along different communication paths, and reassembling them at their destinations?
A) Multiplexing
B) Packet shifting
C) Packet routing
D) ATM
E) Packet switching
Answer: E
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

4) The telephone system is an example of a _____ network.
A) peer-to-peer
B) wireless
C) packet-switched
D) circuit-switched
E) client/server
Answer: D
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

5) Which of the following is *not* a characteristic of packet switching?
A) Packets travel independently of each other.
B) Packets are routed through many different paths.
C) Packet switching requires point-to-point circuits.
D) Packets include data for checking transmission errors.
E) Packets are reassembled into the original message when they reach their destinations.
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

6) In TCP/IP, IP is responsible for which of the following?
A) Disassembling and reassembling packets during transmission
B) Establishing an Internet connection between two computers
C) Moving packets over the network
D) Sequencing the transfer of packets
E) Breaking messages down into packets
Answer: A
Difficulty: Challenging
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

7) Which of the following is the best description of a protocol in a telecommunications network architecture?
A) A device that handles the switching of voice and data in a local area network
B) A standard set of rules and procedures for control of communications in a network
C) A communications service for microcomputer users
D) The main computer in a telecommunications network
E) A pathway through which packets are routed
Answer: B
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

8) What are the four layers of the TCP/IP reference model?
A) Physical, Application, Transport, and Network Interface
B) Physical, Application, Internet, and Network Interface
C) Application, Transport, Internet, and Network Interface
D) Application, Hardware, Internet, and Network Interface
E) Software, Hardware, Network Interface, Internet
Answer: C
Difficulty: Challenging
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

9) On which of the following protocols is the Internet based?
A) TCP/IP
B) FTP
C) IMAP
D) HTTP
E) DNS
Answer: A
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

10) Client/server computing is a:
A) network that connects sensors to desktop computers.
B) network where centralized mainframe computers serve local devices.
C) centralized model of computing for large corporations.
D) distributed computing model where clients are linked to one another through a network that is controlled by a network server computer.
E) centralized computing model where local computers are connected to one another by a network.
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

11) Telephone networks are based on the same principles as computer networks.
Answer: FALSE
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

12) A NOS must reside on all the local computers in a network.
Answer: FALSE
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

13) A hub is a networking device that sends packets of data to all other devices on the network.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

14) In a client/server network, a network server sets the rules of communication for the network.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

15) A computer network consists of at least two computers.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

16) Client/server computing has largely replaced centralized mainframe computing.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

17) Computer networks that use packet switching are less efficient than telephone networks that use circuit switching.
Answer: FALSE
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

18) Two computers using TCP/IP can communicate even if they are based on different hardware and software platforms.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

19) In a large company today, you will often find an infrastructure that includes hundreds of small LANs linked to each other as well as to corporate-wide networks.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

20) TCP/IP was developed during the early 1970s to support efforts to help scientists transmit data among different types of computers over long distances.
Answer: TRUE
Difficulty: Moderate
AACSB: Reflective thinking
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

21) How does packet switching work?
Answer: Packet switching is a method of slicing digital messages into parcels called packets, sending the packets along different communication paths as they become available, and then reassembling the packets once they arrive at their destinations. Packet switching makes much more efficient use of the communications capacity of a network than did circuit-switching. In packet-switched networks, messages are first broken down into small fixed bundles of data called packets. The packets include information for directing the packet to the right address and for checking transmission errors along with the data. The packets are transmitted over various communication channels using routers, each packet traveling independently. Packets of data originating at one source will be routed through many different paths and networks before being reassembled into the original message when they reach their destinations.
Difficulty: Moderate
AACSB: Analytical thinking
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

22) Identify the layers of the Department of Defense reference model for TCP/IP, and describe how this model works.
Answer: The application layer enables client application programs to access the other layers and defines the protocols that applications use to exchange data. One of these application protocols is the Hypertext Transfer Protocol (HTTP), which is used to transfer Web page files. The transport layer is responsible for providing the application layer with communication and packet services. This layer includes TCP and other protocols. The Internet layer is responsible for addressing, routing, and packaging data packets called IP datagrams. The Internet Protocol is one of the protocols used in this layer. The network interface layer is responsible for placing packets on and receiving them from the network medium, which could be any networking technology.
Data sent from one computer to the other passes downward through all four layers, starting with the sending computer's application layer and passing through the network interface layer. After the data reach the recipient host computer, they travel up the layers and are reassembled into a format the receiving computer can use. If the receiving computer finds a damaged packet, it asks the sending computer to retransmit it. This process is reversed when the receiving computer responds.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

23) How are modern telephone and computer networks different from what firms used in the past?
Answer: Modern telephone and computer networks are converging into a single digital network using shared Internet-based standards and technology. Telecom companies offer full suites of telecommunication and Internet service. In the past, these two types of networks were distinct—telephone networks and computer networks performed completely different services and were not affiliated with one another. Additionally, modern communication networks are much faster and more cost effective than they were in the past.
Difficulty: Challenging
AACSB: Application of knowledge; Written and oral communication
LO: 7-1: What are the principal components of telecommunications networks and key networking technologies?

24) Which signal types are represented by a continuous waveform?
A) Laser
B) Optical
C) Digital
D) RFID
E) Analog
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

25) Which of the following is a device that makes possible the translation of digital signals to analog sound signals used by a computer network?
A) Local area network
B) Modem
C) DSL
D) Twisted wire
E) TCP/IP
Answer: B
Difficulty: Easy
AACSB: Information technology
LO: 7-2: What are the different types of networks?

26) Which type of network is used to connect digital devices within a city or metropolitan area?
A) Wi-Fi
B) LAN
C) WAN
D) MAN
E) SAN
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

27) Which type of network treats all processors equally and allows peripheral devices to be shared without going to a separate server?
A) MAN
B) Wireless
C) LAN
D) Windows domain network
E) Peer-to-peer
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

28) Which type of network would be most appropriate for a business comprised of three employees and a manager located in the same office space, whose primary need is to share documents?
A) MAN
B) Domain-based LAN
C) Peer-to-peer network
D) WAN
E) SAN
Answer: C
Difficulty: Moderate
AACSB: Analytical thinking
LO: 7-2: What are the different types of networks?

29) A network that spans a college or corporate facility is called a:
A) CAN.
B) MAN.
C) LAN.
D) WAN.
E) WSN.
Answer: A
Difficulty: Easy
AACSB: Information technology
LO: 7-2: What are the different types of networks?

30) A network that covers entire geographical regions is most commonly referred to as a(n):
A) local area network.
B) intranet.
C) peer-to-peer network.
D) wide area network.
E) metropolitan area network.
Answer: D
Difficulty: Easy
AACSB: Information technology
LO: 7-2: What are the different types of networks?

31) Bandwidth is the:
A) number of frequencies that can be broadcast through a medium.
B) number of cycles per second that can be sent through a medium.
C) difference between the highest and lowest frequencies that can be accommodated on a single channel.
D) total number of bytes that can be sent through a medium per second.
E) geographical distance spanned by a network.
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

32) The total amount of digital information that can be transmitted through any telecommunications medium is measured in:
A) bps.
B) Hertz.
C) baud.
D) gigaflops.
E) RPMs.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

33) A(n) _____ signal is a discrete, binary waveform that transmits data coded into two discrete states such as 1-bits and 0-bits.
A) modulated
B) broadband
C) T1
D) analog
E) digital
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

34) Coaxial cable is similar to that used for cable television and consists of thickly insulated copper wire.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

35) Fiber-optic cable is more expensive and harder to install than wireless media.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

36) Bandwidth refers to the range of frequencies that can be transmitted by a telecommunications channel.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-2: What are the different types of networks?

37) You have been hired by a small new web design firm to set up a network for its single office location. The network is primarily needed for exchanging files, accessing and managing beta websites on their web server, and connecting to the Internet. The firm hires many freelancers who come into the office on an ad-hoc basis and it does not have a lot of money to spend on infrastructure. What type of network will you recommend?
Answer: Student answers will vary. An example answer is: I would recommend a mixed wired and wireless network. The wired LAN would connect the web servers and primary workstations and connect via cable service to the Internet. Freelancers could connect wirelessly via access points.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-2: What are the different types of networks?

38) What are the two types of signals used to communicate a message in a network and how are they different? What device converts one type to the other type?
Answer: The two ways to communicate a message in a network are analog signals and digital signals. An analog signal is represented by a continuous waveform that passes through a communications medium and is used for voice communication. Examples include the telephone handset and other types of speakers that generate analog sound. On the other hand, digital signals are binary waveforms (not continuous) that communicate information as strings of two discrete states: one bit or zero bits (often depicted as strings of zeroes and ones). Computers use these types of signals and use modems to convert digital signals to analog signals.
Difficulty: Challenging
AACSB: Information technology; Written and oral communication
LO: 7-2: What are the different types of networks?

39) What are some of the common types of physical transmission media and what differentiates them from one another?
Answer: Common types of physical transmission media include twisted pair wire, coaxial cable, fiber-optic cable, and wireless transmission media. Twisted pair wire consists of strands of copper wire twisted in pairs for voice and data communications. Coaxial cable consists of thickly insulated copper wires capable of high-speed data transmission and resistance to interference. Fiber-optic cable consists of strands of clear glass fiber that transmit data as pulses of light generated by lasers. Wireless transmission media is based on radio signals and involves satellite microwave systems and cellular networks.
Difficulty: Challenging
AACSB: Information technology; Written and oral communication
LO: 7-2: What are the different types of networks?

40) Which of the following is *not* one of the top five search engines?
A) Facebook
B) Yahoo
C) Microsoft Bing
D) Baidu
E) Google
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

41) Digital subscriber lines:
A) operate over existing telephone lines to carry voice, data, and video.
B) operate over coaxial cable lines to deliver Internet access.
C) are very-high-speed data lines typically leased from long-distance telephone companies.
D) have up to twenty-four 64-Kbps channels.
E) are assigned to every computer on the Internet.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

42) T1 lines:
A) operate over existing telephone lines to carry voice, data, and video.
B) operate over coaxial lines to deliver Internet access.
C) do not provide guaranteed service levels, but simply "best effort."
D) have up to twenty-four 64-Kbps channels.
E) are high-speed, leased data lines providing guaranteed service levels.
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

43) What service converts natural language names to IP addresses?
A) HTML
B) FTP
C) IP
D) HTTP
E) DNS
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

44) The domain .gov is a(n):
A) Internet root domain.
B) top-level domain.
C) host domain.
D) network domain.
E) third level domain.
Answer: B
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

45) In the domain name "http://books.azimuth-interactive.com", which element is the second-level domain?
A) books
B) azimuth-interactive.com
C) com
D) none; there is no second-level domain in this name
E) books.azimuth-interactive
Answer: B
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

46) Which organization manages the domain name system of the Internet?
A) None (no one "owns" the Internet)
B) W3C
C) ICANN
D) The Department of Commerce (U.S.)
E) IAB
Answer: C
Difficulty: Challenging
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

47) IPv6 has been developed in order to:
A) update the packet transmission protocols for higher bandwidth.
B) create more IP addresses.
C) allow for different levels of service.
D) support Internet2.
E) reduce excess IP addresses.
Answer: B
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

48) Predictive search in Google's search engine:
A) maintains a history of your searches and then predicts what you will search on next.
B) uses a tracking service and cookies on your browser to predict search results.
C) uses a knowledge graph of what similar people searched on to predict your search interests.
D) uses a semantic approach to predict what you are looking for.
E) predicts what you are looking for as you enter words into the query box.
Answer: E
Difficulty: Challenging
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

49) Instant messaging is a type of _____ service.
A) chat
B) cellular
C) email
D) wireless
E) network
Answer: A
Difficulty: Easy
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

50) _____ integrate disparate channels for voice communications, data communications, instant messaging, email, and electronic conferencing into a single experience.
A) Wireless networks
B) Intranets
C) Virtual private networks
D) Modems
E) Unified communications
Answer: E
Difficulty: Easy
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

51) A VPN:
A) is an encrypted private network configured within a public network.
B) is more expensive than a dedicated network.
C) provides secure, encrypted communications using Telnet.
D) is an Internet-based service for delivering voice communications.
E) is a proprietary networking service technology developed by individual corporations.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

52) Web browser software requests web pages from the Internet using which of the following protocols?
A) URL
B) HTTP
C) DNS
D) HTML
E) FTP
Answer: B
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

53) Together, a protocol prefix, a domain name, a directory path, and a document name, are called a(n):
A) uniform resource locator.
B) IP address.
C) third-level domain.
D) root domain.
E) child domain.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

54) The most common web servers today are:
A) Microsoft IIS and IBM HTTP Server.
B) WebSTAR and Netscape Server.
C) IBM HTTP Server and Apache HTTP Server.
D) Netscape Server and Apache HTTP.
E) Apache HTTP Server and Microsoft IIS.
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

55) Which of the following pulls content from websites and feeds it automatically to users' computers?
A) FTP
B) RSS
C) HTTP
D) Bluetooth
E) IPv6
Answer: B
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

56) Which of the following can be used to help a website achieve a higher ranking with the major search engines?
A) VPN
B) IAB
C) SEM
D) SEO
E) RSS
Answer: D
Difficulty: Easy
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

57) Which of the following statements is *not* true about search engines?
A) They are arguably the Internet's "killer app."
B) They have solved the problem of how users instantly find information on the Internet.
C) They are monetized almost exclusively by search engine marketing.
D) There are hundreds of search engines vying for user attention, with no clear leader having yet emerged.
E) Users are increasingly using search engines on mobile devices.
Answer: D
Difficulty: Easy
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

58) Which process is used to protect transmitted data in a VPN?
A) Tunneling
B) PPP
C) VOIP
D) Packet-switching
E) Chaining
Answer: A
Difficulty: Challenging
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

59) _____ monetizes the value of the data stored by search engines.
A) TCP/IP
B) RSS
C) WiMax
D) IoT
E) Search engine marketing
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

60) Shopping bots use _____ software for searching the Internet.
A) Web 2.0
B) Web 3.0
C) intelligent agent
D) comparison
E) SEO
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

61) Which one of the following statements is *not* true?
A) The Internet backbone is owned by the federal government in the United States.
B) ICANN manages the domain name system.
C) The IAB establishes the overall structure of the Internet.
D) The Internet must conform to laws where it operates.
E) W3C determines programming standards for the Internet.
Answer: A
Difficulty: Challenging
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

62) A(n) _____ is a commercial organization with a permanent connection to the Internet that sells temporary connections to retail subscribers.
A) RSS
B) WAN
C) NFP
D) ISP
E) FTP
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

63) The backbone networks of the Internet are typically owned by long-distance telephone companies called:
A) regional network providers.
B) enhanced service providers.
C) internet bulk providers.
D) backbone providers.
E) network service providers.
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

64) A(n) _____ is software for locating and managing stored web pages.
A) web server
B) net server
C) router
D) modem
E) hub
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

65) The Internet of Things (IoT) refers to:
A) the fact that nearly everyone has some kind of computer today.
B) the idea that nearly everyone in the United States is connected to the Internet.
C) billions of Internet-connected sensors.
D) the role of computer processors in automobiles.
E) the idea that cars, planes, factories, and government are all connected to the Internet.
Answer: C
Difficulty: Moderate
AACSB: Reflective thinking
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

66) By 2019, it is estimated that more than 215 million Americans will use mobile search.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

67) Wikis allow visitors to change or add to the original posted material.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

68) The Domain Name System (DNS) converts domain names to IP addresses.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

69) VoIP technology delivers voice information in digital form using circuit switching.
Answer: FALSE
Difficulty: Easy
AACSB: Information technology
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

70) Mobile search makes up more than 50% of all Internet searches.
Answer: TRUE
Difficulty: Easy
AACSB: Reflective thinking
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

71) The "Internet of Things" refers to a vision of a pervasive Web, in which common objects are connected to everyone on the Internet.
Answer: FALSE
Difficulty: Easy
AACSB: Application of knowledge
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

72) Digital rights activists believe differentiated pricing does not violate net neutrality principles.
Answer: FALSE
Difficulty: Easy
AACSB: Application of knowledge
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

73) In addition to being an online retailer, Amazon is also a powerful product search engine.
Answer: TRUE
Difficulty: Easy
AACSB: Application of knowledge
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

74) The Internet of Things is based on billions of Internet-connected sensors throughout the physical world.
Answer: TRUE
Difficulty: Easy
AACSB: Application of knowledge
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

75) What is IPv6 and why is it necessary?
Answer: The Internet was not originally designed to handle the transmission of massive quantities of data and billions of users. Because of sheer Internet population growth, the world is about to run out of available IP addresses using the old addressing convention. The old addressing system is being replaced by a new version of the IP addressing schema called IPv6 (Internet Protocol version 6), which contains 128-bit addresses (2 to the power of 128), or more than a quadrillion possible unique addresses. IPv6 is compatible with most modems and routers sold today, and IPv6 will fall back to the old addressing system if IPv6 is not available on local networks. The transition to IPv6 will take several years as systems replace older equipment.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

76) What are the business advantages of using voice over IP (VoIP) technology?
Answer: Businesses can lower costs by using the Internet to deliver voice information, avoiding the tolls charged by local and long-distance telephone networks. They can lower costs from not having to create a separate telephone network. VOIP enables communication by supporting Internet conference calls using video. VOIP also provides flexibility–phones can be added or moved to different offices without rewiring or reconfiguring the network.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

77) What are some of the key features of the future Web and Internet?
Answer: The key features of the future Web and Internet are more tools for individuals to make sense out of the trillions of pages on the Internet, or the millions of apps available for smartphones and a visual, even three-dimensional (3D), web where you can walk through pages in a 3D environment. Student views on the impact on businesses would vary. An example answer is: This potentially could have huge effects on businesses as simple analysis becomes mechanized, requiring fewer humans to perform this basic task.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

78) Blogs, wikis, and social networking sites were designed for individuals to communicate with each other. What uses do businesses have for these tools? Give specific examples.
Answer: Businesses can use these tools to reach out and market to potential new customers. For example, many businesses have Facebook sites to market their product to specific groups on Facebook. They can use these tools to support and give added value to existing customers. For example, a software company could have a blog that discusses in-depth use of a software product. Businesses can also use these tools within their company to communicate between departments and share knowledge. For example, a company wiki could be set up as a repository of expert information.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

79) What has made the Google search engine so successful?
Answer: The Google search engine became so successful because it was one of the first search engines to incorporate page ranking. Not only does it index the web pages it finds according to both keywords and combinations of keywords, it also ranks each page according to the number of pages that link to it, and the number of pages it links to itself. This helped make search results more relevant when compared to search engines relying solely on key words used on web pages. A user could be relatively certain that they would find relevant information within the top results of a Google search. Improved search results for the user, along with continual improvements to its search engine, the development and other web applications, tools, and its Ad Sense product where it sells keywords to the highest bidder has made Google so successful as a search engine and marketing firm.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

80) Explain the Domain Name System. What are some of the common domain name extensions currently available and what types of services do they designate?
Answer: The Domain Name System (DNS) converts domain names to IP addresses. Domain names are the English-like names that correspond to the unique 32-bit numeric IP address for each computer connected to the Internet. DNS is a hierarchy, with the root domain at the top, top-level domains such as .com and .edu one level below, and second-level domains designate a top-level name and a second-level name, like amazon.com. Common domain name extensions include .edu (educational institutions), .gov (government agencies), .mil (military), .net (network computers), .org (nonprofit organizations and foundations), .biz (business firms), and .info (information providers). Additionally, countries have their own domain names. Answers may cite a variety of other domain name extensions.
Difficulty: Challenging
AACSB: Application of knowledge; Written and oral communication
LO: 7-3: How do the Internet and Internet technology work, and how do they support communication and e-business?

81) All of the following are physical components of an RFID system *except*:
A) bar codes.
B) antennas.
C) radio transmitters.
D) tags.
E) a stationary or handheld device.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

82) Which digital cellular standard is used widely throughout the world *except* the United States?
A) GSM
B) CDMA
C) WLAN
D) LTD
E) 4G
Answer: A
Difficulty: Challenging
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

83) The concept of a future web in which it is commonplace for everyday objects to be connected, controlled, or monitored over the Internet is called:
A) the Internet of Things.
B) the Semantic Web.
C) Internet2.
D) a 3-D Web.
E) Web 2.0.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

84) Which of the following statements about RFID is *not* true?
A) RFIDs transmit only over a short range.
B) RFIDs use an antenna to transmit data.
C) Microchips embedded in RFIDs are used to store data.
D) RFIDs require line-of-sight contact to be read.
E) RFID tags and antennas come in a variety of shapes and sizes.
Answer: D
Difficulty: Moderate
AACSB: Reflective thinking
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

85) Wireless sensor networks (WSNs) are used for the following tasks *except:*
A) processing consumer transactions.
B) monitoring machines.
C) detecting radioactive materials.
D) protecting property.
E) identifying vehicles for trucking firms.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

86) 4G networks use which of the following standards?
A) GSM and LTD
B) CDMA and PAN
C) LTE and LTD
D) T-Mobile and AT&T
E) LTE and WiMax
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

87) Which of the following statements about 5G is true?
A) 5G is built on the foundation of 4G networks.
B) 5G will transmit data in the megabyte range.
C) 5G will be able to transmit data in the gigabit range.
D) 5G will have longer transmission delays.
E) 5G is not currently being developed by large Internet network providers.
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

88) Bluetooth can be used to link up to _____ devices within a 10-meter area using low-power, radio-based communication.
A) two
B) five
C) eight
D) fifteen
E) twenty
Answer: C
Difficulty: Challenging
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

89) One or more access points positioned on a ceiling, wall, or other strategic spot in a public place to provide maximum wireless coverage for a specific area are referred to as:
A) touch points.
B) netcenters.
C) hot points.
D) wireless hubs.
E) hotspots.
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

90) The 802.11 set of standards is known as:
A) WLAN.
B) WSN.
C) Wi-Fi.
D) WiMax.
E) WAN.
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

91) The WiMax standard can transmit up to a distance of approximately:
A) 30 meters.
B) 500 meters.
C) 30 miles.
D) 5 miles.
E) 70 miles.
Answer: C
Difficulty: Challenging
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

92) Based on your reading of the examples in the chapter, which of the following would be the best use of RFID for a business?
A) Logging transactions
B) Managing the supply chain
C) Lowering network costs
D) Enabling client communication
E) Improving employee engagement
Answer: B
Difficulty: Moderate
AACSB: Analytical thinking
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

93) Which type of application does Macy's use to track items for sale on store shelves?
A) Web 3.0 application
B) IoT application
C) BLE application
D) GPS application
E) RFID application
Answer: E
Difficulty: Challenging
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

94) A(n) _____ is a box consisting of a radio receiver/transmitter and antennas that links to a wired network, router, or hub.
A) RFID receiver
B) WiMax receiver
C) access point
D) hub
E) hotspot
Answer: C
Difficulty: Challenging
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

95) RFID technology is being gradually replaced by less costly technologies such as WSNs.
Answer: FALSE
Difficulty: Moderate
AACSB: Information technology
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

96) Apple Pay uses an RFID-related technology called near field communication.
Answer: TRUE
Difficulty: Easy
AACSB: Application of knowledge
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

97) NFC tags are always passive.
Answer: FALSE
Difficulty: Easy
AACSB: Application of knowledge
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

98) How are RFID systems used in inventory control and supply chain management?
Answer: In inventory control and supply chain management, RFID systems capture and manage more detailed information about items in warehouses or in production than bar coding systems. If a large number of items are shipped together, RFID systems track each pallet, lot, or even unit item in the shipment. This technology may help companies improve receiving and storage operations by enhancing their ability to "see" exactly what stock is stored in warehouses or on retail store shelves.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

99) What are wireless sensor networks? How do they work and what are they used for?
Answer: Wireless sensor networks (WSNs) are networks of interconnected wireless devices that are embedded into the physical environment to provide measurements of many points over large spaces. These devices have built-in processing, storage, and radio frequency sensors and antennas. They are linked into an interconnected network that routes the data they capture to a computer for analysis. These networks range from hundreds to thousands of nodes. Because wireless sensor devices are placed in the field for years at a time without any maintenance or human intervention, they must have very low power requirements and batteries capable of lasting for years. Wireless sensor networks are valuable in areas such as monitoring environmental changes; monitoring traffic or military activity; protecting property; efficiently operating and managing machinery and vehicles; establishing security perimeters; monitoring supply chain management; or detecting chemical, biological, or radiological material.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?

100) What are some of the standards and networks used in digital cellular service, and where are they in use?
Answer: Common cellular system standards include the Global System for Mobile Communications (GSM), which is used in Europe and much of the world outside of the United States. In the U.S., Code Division Multiple Access is used by Verizon and Sprint. It is a more efficient system than GSM. The generations of networks in use today by cellular systems includes 3G and 4G. 4G networks offer higher speeds than 3G. The standards in use by 4G Networks are Long Term Evolution (LTE) and Worldwide Interoperability for Microwave Access (WiMax). The next generation of wireless technology, called 5G, is still under development. 5G will support transmission of huge amounts of data in the gigabit range, with fewer transmission delays and the ability to connect many more devices (such as sensors and smart devices) at once than existing cellular systems. 5G technology will be needed for self-driving vehicles, smart cities, and extensive use of the Internet of Things. AT&T, Verizon, and other carriers are starting to launch 5G networks.
Difficulty: Challenging
AACSB: Application of knowledge; Written and oral communication
LO: 7-4: What are the principal technologies and standards for wireless networking, communication, and Internet access?