Chapter 2: Technology Infrastructure: The Internet and the World Wide Web

TRUE/FALSE

1. Networks of computers and the Internet that connects them to each other form the basic technological structure that underlies virtually all electronic commerce.

   ANS: T PTS: 1 REF: 55

2. The USENET was the earliest of the networks that eventually combined to become what we now call the Internet.

   ANS: F PTS: 1 REF: 56

3. E-mail was born in 1972 when a researcher wrote a program that could send and receive messages over the Defense Department network.

   ANS: T PTS: 1 REF: 56

4. In 1989, the NSF permitted two commercial e-mail services, MCI Mail and CompuServe, to establish limited connections to the Internet for the sole purpose of exchanging e-mail transmissions with users of the Internet.

   ANS: T PTS: 1 REF: 57

5. A network of computers that are located close together—for example, in the same building—is called a local area network.

   ANS: T PTS: 1 REF: 58

6. The Internet provides a high degree of security in its basic structure.

   ANS: F PTS: 1 REF: 60

7. Although fax, telephone, e-mail, and overnight express carriers have been the main communications tools for business for many years, extranets can replace many of them at a lower cost.

   ANS: T PTS: 1 REF: 61

8. An intranet extends beyond the organization that created it.

   ANS: F PTS: 1 REF: 61

9. The “virtual” part of VPN means that the connection seems to be a temporary, internal network connection, but the connection is actually permanent.

   ANS: F PTS: 1 REF: 61

10. VPN software must be installed on the computers at both ends of the transmission.

    ANS: T PTS: 1 REF: 61

11. The technologies used (public networks, private networks, or VPNs) are independent of organizational boundaries.

ANS: T PTS: 1 REF: 62

12. IP addresses appear as five numbers separated by periods.

ANS: F PTS: 1 REF: 63

13. SMTP is a common protocol used for sending and retrieving e-mail.

ANS: T PTS: 1 REF: 65

14. IMAP is a newer e-mail protocol that performs the same basic functions as POP, but includes additional features.

ANS: T PTS: 1 REF: 65

15. The POP protocol provides support for MIME.

ANS: T PTS: 1 REF: 65

16. At a technological level, the Web is nothing more than software that runs on computers that are connected to the Internet.

ANS: T PTS: 1 REF: 66

17. The set of rules for delivering Web page files over the Internet is in a protocol called the Hypertext Transfer Protocol (HTTP).

ANS: T PTS: 1 REF: 66

18. An HTML document is similar to a word-processing document in that it specifies how a particular text element will appear.

ANS: F PTS: 1 REF: 67

19. Domain names are sets of words that are assigned to specific IP addresses.

ANS: T PTS: 1 REF: 69

20. The Internet Corporation for Actualized Names and Nuances has the responsibility of managing domain names and coordinating them with the IP address registrars.

ANS: F PTS: 1 REF: 69

21. HTML is a meta language because users can create their own markup elements that extend the usefulness of XML.

ANS: F PTS: 1 REF: 71

22. SGML offers a system of marking up documents that is independent of any software application.

ANS: T PTS: 1 REF: 72

23. The term cascading is used because designers can apply many style sheets to the same Web page, one on top of the other.

ANS: T PTS: 1 REF: 78

24. The higher the bandwidth, the faster data files travel and the faster Web pages appear on your screen.

ANS: T PTS: 1 REF: 84

25. Asymmetric connections provide the same bandwidth for each direction.

ANS: F PTS: 1 REF: 84

MULTIPLE CHOICE

1. The combination of telephone lines and the closed switches that connect them to each other is called a ____.
   a. LAN
   b. WAN
   c. circuit
   d. pathway

   ANS: C PTS: 1 REF: 58

2. On a packet-switched network, files and e-mail messages are broken down into small pieces, called ____.
   a. messages
   b. pieces
   c. circuits
   d. packets

   ANS: D PTS: 1 REF: 59

3. When packets leave a network to travel on the Internet, they must be translated into a standard format. ____ usually perform this translation function.
   a. Switches
   b. Bridges
   c. Routers
   d. Routing algorithms

   ANS: C PTS: 1 REF: 59

4. Routers and the telecommunications lines connecting them are collectively referred to as ____.
   a. backbone routers
   b. Internet routers
   c. an asynchronous backbone
   d. the Internet backbone

   ANS: D PTS: 1 REF: 60

5. A(n) ____ does not extend beyond the boundaries of a particular organization.
   a. Internet
   b. extranet
   c. intranet
   d. ARPANET

   ANS: C PTS: 1 REF: 61

6. A(n) ____ is like a separate, covered commuter lane on a highway (the Internet) in which passengers are protected from being seen by the vehicles traveling in the other lanes.
   a. VPN
   b. IP wrapper
   c. extranet
   d. IAP

   ANS: A PTS: 1 REF: 61

7. A(n) ____ is a connection that uses public networks and their protocols to send data in a way that protects the data as well as a private network would, but at a lower cost.
   a. public network
   b. virtual public network
   c. virtual private network
   d. private network

   ANS: C PTS: 1 REF: 61

8. A ____ is a collection of rules for formatting, ordering, and error checking data sent across a network.
   a. routing algorithm
   b. backbone router
   c. protocol
   d. packet

   ANS: C PTS: 1 REF: 62

9. ____ determine how the sending device indicates that it has finished sending a message, and how the receiving device indicates that it has received the message.
   a. Routers
   b. Bridges
   c. Protocols
   d. Adapters

   ANS: C PTS: 1 REF: 62

10. In networking applications, an 8-bit number is often called a(n) ____.
    a. octet
    b. netbit
    c. piconet
    d. bit

    ANS: A PTS: 1 REF: 63

11. Network engineers have devised a number of stopgap techniques to stretch the supply of IP addresses. One of the most popular techniques is ____.
    a. subnetting
    b. subletting
    c. sub-blocking
    d. piconetting

    ANS: A PTS: 1 REF: 64

12. A computer called a ____ converts private IP addresses into normal IP address when it forwards packets from those computers to the Internet.
    a. routing algorithm device
    b. network address translation device
    c. subnet translation device
    d. private network device

    ANS: B PTS: 1 REF: 64

13. The ____ numbering system uses 16 characters.
    a. hexadecimal
    b. decimal
    c. binary
    d. ASCII

    ANS: A PTS: 1 REF: 64

14. IPv6 uses a ___ number for addresses.
    a. 32-bit
    b. 56-bit
    c. 128-bit
    d. 256-bit

    ANS: C PTS: 1 REF: 64

15. The purpose of a(n) ____ is to respond to requests for Web pages from Web clients.
    a. URL
    b. e-mail
    c. Web server
    d. top-level domain

ANS: C PTS: 1 REF: 65

16. ____ specifies the format of a mail message and describes how mail is to be administered on the e-mail server and transmitted on the Internet.
    a. SMTP
    b. TCP/IP
    c. MIME
    d. POP

    ANS: A PTS: 1 REF: 65

17. A newer e-mail protocol that performs the same basic functions as POP, but includes additional features, is known as ____.
    a. IMAP
    b. SMTP
    c. POPI
    d. IPOP

    ANS: A PTS: 1 REF: 65

18. ____ lets users create and manipulate e-mail folders and individual e-mail messages while the messages are still on the e-mail server.
    a. POP
    b. SMTP
    c. IMAP
    d. MIME

    ANS: C PTS: 1 REF: 65

19. ____ is a set of rules for handling binary files, such as word-processing documents, spreadsheets, photos, or sound clips, that are attached to e-mail messages.
    a. IMAP
    b. MIME
    c. SMTP
    d. POP

    ANS: B PTS: 1 REF: 65

20. The combination of the protocol name and the domain name is called the ____.
    a. URT
    b. URO
    c. URL
    d. HTTP

    ANS: C PTS: 1 REF: 66

21. HTML was developed by ____.
    a. ARPANET
    b. NSF
    c. Ted Nelson
    d. Tim Berners-Lee

    ANS: D PTS: 1 REF: 67

22. ____ was the first Web browser that became widely available for personal computers.
    a. Mosaic
    b. Netscape
    c. Internet Explorer
    d. CompuServe

    ANS: A PTS: 1 REF: 67

23. ____ are sets of words that are assigned to specific IP addresses.
    a. Domain names
    b. URLs
    c. Octets
    d. Piconets

    ANS: A PTS: 1 REF: 69

24. The early versions of ____ let Web page designers create text-based electronic documents with headings, title bar titles, bullets, lines, and ordered lists.

a. HTTP
b. HTML
c. SGML
d. XML

ANS: B PTS: 1 REF: 72

25. In HTML, hyperlinks are created using the HTML ____ tag.
a. head
b. anchor
c. title
d. ol

ANS: B PTS: 1 REF: 77

COMPLETION

1. A computer _____ is any technology that allows people to connect computers to each computer.

ANS: network

PTS: 1 REF: 55

2. A network which uses a specific set of rules and connects networks all over the world to each other, is called the _____.

ANS: Internet

PTS: 1 REF: 55

3. The part of the Internet known as the _____ is a subset of the computers on the Internet that are connected to one other in a specific way that makes them and their contents easily accessible to each other.

ANS:
World Wide Web
WWW
Web
WWW (World Wide Web)
World Wide Web (WWW)

PTS: 1 REF: 55

4. A(n) _____ is an e-mail address that forwards any message it receives to any user subscribed to the list.

ANS: mailing list

PTS: 1 REF: 56

5. In 1979, a group of students and programmers at Duke University and the University of North Carolina started _____, which allows anyone who connects to the network to read and post articles on a variety of subjects.

ANS:
Usenet
User's News Network

PTS: 1 REF: 56

6. Usenet survives on the Internet today, with more than 1000 different topic areas that are called _____.

   ANS: newsgroups

   PTS: 1 REF: 56

7. Internet _____ are computers that are directly connected to the Internet.

   ANS: hosts

   PTS: 1 REF: 57

8. _____ providers sell Internet access rights directly to larger customers and indirectly to smaller firms and individuals through other companies, called ISPs.

   ANS: Network access

   PTS: 1 REF: 57

9. Programs apply their routing algorithms to information they have stored in routing tables or _____ tables.

   ANS: configuration

   PTS: 1 REF: 59

10. The routers connected to the Internet backbone are sometimes called _____ routers.

    ANS: backbone

    PTS: 1 REF: 60

11. A(n) _____ is any computer network or telecommunications network that is available to the public.

    ANS: public network

    PTS: 1 REF: 60

12. A(n) _____ is used when the internet extends beyond the boundaries of an organization.

    ANS: extranet

    PTS: 1 REF: 61-62

13. The _____ Protocol controls the disassembly of a message or a file into packets before it is transmitted over the Internet, and it controls the reassembly of those packets into their original formats when they reach their destinations.

ANS: Transmission Control

PTS: 1 REF: 62

14. The _____ Protocol specifies the addressing details for each packet, labeling each with the packet's origination and destination addresses.

ANS: Internet

PTS: 1 REF: 62-63

15. The set of rules for delivering Web page files over the Internet is in a protocol called the _____.

ANS:
Hypertext Transfer Protocol
Hypertext Transfer Protocol (HTTP)
HTTP
HTTP (Hypertext Transfer Protocol)

PTS: 1 REF: 66

16. A(n) _____ server is a computer that stores files written in Hypertext Markup Language (HTML).

ANS: hypertext

PTS: 1 REF: 67

17. A(n) _____ is a language that can be used to define other languages.

ANS: metalanguage

PTS: 1 REF: 71

18. HTML, XML, and XHTML have descended from the original _____ specification.

ANS:
SGML
Standard Generalized Markup Language
SGML (Standard Generalized Markup Language)
Standard Generalized Markup Language (SGML)

PTS: 1 REF: 71

19. In HTML, the text elements that are related to each another are called _____ elements.

ANS: hypertext

PTS: 1 REF: 72

20. A(n) _____ hyperlink structure resembles conventional paper documents in that the reader begins on the first page and clicks a Next button to move to the next page in a serial fashion.

ANS: linear

PTS: 1 REF: 76

21. _____ let designers define formatting styles that can be applied to multiple Web pages.

ANS:
Cascading Style Sheets
CSS
CSS (Cascading Style Sheets)
Cascading Style Sheets (CSS)

PTS: 1 REF: 78

22. An XML document is embedded within the _____ document.

ANS:
HTML
Hypertext Markup Language
HTML (Hypertext Markup Language)
Hypertext Markup Language (HTML)

PTS: 1 REF: 78

23. _____ tags do not specify how text appears on a Web page; the tags convey the meaning (the semantics) of the information included within them.

ANS:
Extensible Markup Language
XML
XML (Extensible Markup Language)
Extensible Markup Language (XML)

PTS: 1 REF: 81

24. _____ is the amount of data that can travel through a communication medium per unit of time.

ANS: Bandwidth

PTS: 1 REF: 84

25. Upstream bandwidth is also called _____ bandwidth.

ANS: upload

PTS: 1 REF: 84

ESSAY

1. As an individual packet travels from one network to another, the computers through which the packet travels determine the best route for getting the packet to its destination. Describe this process.

   ANS:
   The computers that decide how to best forward each packet are called routing computers, router computers, routers, gateway computers (because they act as the gateway from a LAN or WAN to the Internet) or border routers (because they are located at the border between the organization and the Internet.) The programs on the routers that determine the best path contain rules called routing algorithms. The programs apply these algorithms to information they have stored in routing tables or configuration tables. This information includes lists of connections that lead to particular groups of other routers, rules that specify which connection to use first, and rules for handling instances of heavy packet traffic and network congestion.

   PTS: 1 REF: 59

2. What is the difference between a public network and a private network?

   ANS:
   A public network is any computer network or telecommunications network that is available to the public. The Internet is one example of a public network. A private network is a private, leased-line connection between two companies that physically connects their intranets to one another.

   PTS: 1 REF: 60

3. Identify the four key rules for message handling.

   ANS:
   The open architecture philosophy developed for the evolving ARPANET, which later became the core of the Internet, included the use of a common protocol for all computers connected to the Internet and four key rules for message handling: 1) Independent networks should not require any internal changes to be connected to the network, 2) Packets that do not arrive at their destinations must be retransmitted from their source network, 3) Router computers act as receive-and-forward devices; they do not retain information about the packets that they handle, and 4) No global control exists over the network.

   PTS: 1 REF: 62

4. What is the difference between TCP and IP?

   ANS:
   The TCP controls the disassembly of a message or a file into packets before it is transmitted over the Internet, and it controls the reassembly of those packets into their original formats when they reach their destinations. The IP specifies the addressing details for each packet, labeling each with the packet's origination and destination addresses.

   PTS: 1 REF: 62-63

5. What are the advantages of Bluetooth technology?

   ANS:

One major advantage of Bluetooth technology is that it consumes very little power, which is an important consideration for many devices. Another advantage is that Bluetooth devices can discover each other and exchange information automatically. For example, a person using a laptop computer in a temporary office can print to a local Bluetooth-enabled printer without logging in to the network or installing software in either device. The printer and laptop computer electronically recognize each other as Bluetooth devices and immediately can begin exchanging information.

PTS: 1 REF: 88