CHAPTER 1: DATA COMMUNICATIONS, DATA NETWORKS, AND THE INTERNET

TRUE OR FALSE

1. T
2. F
3. T
4. T
5. T
6. F
7. T
8. T
9. F
10. T
11. F
12. T
13. F
14. F
15. T

MULTIPLE CHOICE

1. A
2. A
3. B
4. B
5. A
6. D
7. D
8. A
9. B
10. C
11. C
12. C
13. C
14. C
15. A

SHORT ANSWER

1. advances in technology
2. quality of service (QoS)
3. dense wavelength division
4. Convergence
5. extranet
6. transmission system utilization
7. error detection
8. Flow control
9. Compression
10. Wide Area Networks (WANs)
11. asynchronous transfer mode (ATM)
12. Wireless
13. ARPANET
14. internetworking
15. IP address

CHAPTER 1: DATA COMMUNICATIONS, DATA NETWORKS, AND THE INTERNET

TRUE OR FALSE

T F 1. Data communications deals with the transmission of signals in a reliable and efficient manner.

T F 2. There are several fundamental differences between data processing and data communications.

T F 3. There are no fundamental differences among data, voice, and video communications.

T F 4. Effective and efficient data communication and networking facilities are vital to any enterprise.

T F 5. Growth in services and growth in traffic capacity go hand in hand.

T F 6. The increasing use of optical fiber, while greatly increasing capacity, has caused an increase in transmission prices as well.

T F 7. Convergence refers to the merger of previously distinct telephony and information technologies and markets.

T F 8. Changes in corporate data traffic patterns are driving the creation of high-speed WANs.

T F 9. It is not necessary for a device to interface with the transmission system in order to communicate.

T F 10. A modem is required to establish communication between a workstation and a server over a public telephone network.

T F 11. Compression refers to the ability of a number of devices to share a transmission facility.

T F 12. The basic building block of any communications facility is the transmission line.

T F 13. Developing switching systems with the capacity and rapid response to support the demand requirements with the increased use of fiber optic transmission is no longer a challenge.

T F 14. Frame relay networks are commonly used for terminal-to-computer and computer-to-computer communications.

T F 15. The LAN is owned by the same organization that owns the attached devices.

MULTIPLE CHOICE

1. Enterprises have formed _____ to reach customers, suppliers, and partners while isolating their proprietary information from unwanted access.

   A) intranets and extranets B) internets and extranets

   C) WANS and extranets D) LANS and WANS

2. DWDM enables capacities of _____ per second.

   A) terabits B) picobits

   C) megabits D) gigabits

3. The growth of _____ enhances the ability of employees to take their business context with them as they move about, resulting in the ability to use enterprise information resources and services from virtually anywhere.

   A) extranets B) high-speed wireless access

   C) WANS D) remote data access

4. An _____ uses Internet and Web technology in an isolated facility internal to an enterprise.

   A) application network B) intranet

   C) extranet D) Internet portal

5. A network in which small chunks of data are passed through the network

from node to node, and at each node the entire data chunk is received, stored briefly, and then transmitted to the next node, is a _____ network.

A) packet switching B) ATM

C) circuit switching D) frame relay

6. A dominant architecture in the business environment and the more recent Web-focused intranet trend is _____ computing.

A) Ethernet B) GUI

C) token ring D) client/server

7. The rapid conversion of consumer electronics to digital technology is having an impact on both the Internet and corporate intranets. Two examples of this trend are _____.

A) server farms and DVDs

B) power workgroups and server farms

C) DVDs and CD-ROMs

D) digital versatile disks and digital still cameras

8. The key elements of a simple communications model are _____.

A) source, transmission, destination

B) signal, transmission, receiver

C) source, signal, destination

D) source, signal, receiver

9. Once an interface is established _____ is required for communication.

A) digital conversion B) signal generation

C) synchronization D) transmission

10. In order for data processing devices to communicate certain conventions must be decided on. These requirements can collectively be termed _____.

    A) synchronization B) transmission systems

    C) exchange management D) flow control

11. In situations in which an information exchange is interrupted due to a fault somewhere in the system, _____ techniques are needed to either resume activity at the point of interruption or to restore systems to their state prior to the beginning of the exchange.

    A) flow control B) routing control

    C) recovery D) error correction

12. In a _____ network, a dedicated communications path is established between two stations through the nodes of the network. The telephone network is the most common example.

    A) frame relay B) ATM

    C) circuit switching D) packet switching

13. A _____ is a physical facility that provides the infrastructure to move data between connected networks.

    A) ATM B) FDDI

    C) NAP D) NSP

14. Individual hosts and LANs are connected to an Internet Service Provider through a _____.

    A) NAP B) CPE

    C) POP D) NSP

15. The place where telephone companies terminate customer lines and locate switching equipment to interconnect those lines with other networks is the _____.

A) CO B) ISP

C) POP D) NAP

SHORT ANSWER

1. Three different forces have consistently driven the architecture and evolution of data communications and networking facilities: traffic growth, development of new services, and _____.

2. Today's networks can offer differing levels of _____, which include specifications for maximum delay and minimum throughput.

3. Recent offerings of _____ multiplexing enable capacities of many terabits per second for long-distance telecommunication and data network links.

4. _____ involves moving voice into a data infrastructure, integrating all the voice and data networks inside a user organization into a single data network infrastructure, and then extending that into the wireless arena.

5. An _____ extends a company's intranet out onto the Internet to allow selected customers, suppliers, and mobile workers to access the company's private data and applications.

6. The need to make efficient use of transmission facilities that are typically shared among a number of communicating devices is referred to as _____.

7. There is a potential for error in all communication systems, therefore, _____ and correction are required in circumstances where errors cannot be tolerated.

8. _____ is required to assure that the source does not overwhelm the destination by sending data faster than they can be processed and absorbed.

9. _____ is the process of squeezing the data down so that a lower capacity, cheaper transmission facility can be used to meet a given demand.

10. Networks that generally cover a large geographical area, require the crossing of public right-of-ways, consist of a number of interconnected switching nodes, and rely on circuits provided by a common carrier are _____.
11. Using fixed length packets and sometimes referred to as cell relay, _____ is a

culmination of developments in circuit switching and packet switching. It is so efficient that it can offer a constant data rate channel even though it is using a packet switching technique.

12. _____ networks provide advantages in the areas of mobility and ease of installation and configuration.

13. The Internet evolved from the _____ which was developed in 1969 by the Advanced Research Projects Agency of the U.S. Department of Defense.

14. Communicating across arbitrary, multiple, packet-switched networks is _____.

15. Each IP packet includes an unique numeric address of the destination host. This address is referred to as an _____.

CHAPTER 2: PROTOCOL ARCHITECTURE, TCP/IP, AND INTERNET-BASED APPLICATIONS

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MULTIPLE CHOICE

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10. D
11. C
12. D
13. A
14. A
15. D

SHORT ANSWER

1. protocol architecture
2. TCP/IP
3. physical
4. elastic
5. information
6. Secure Shell (SSH)
7. primitives
8. confirmed
9. Service Access Points (SAPs)
10. encapsulation
11. subnetworks
12. Checksum
13. Simple Network Management Protocol (SNMP)
14. User Datagram Protocol (UDP)
15. 128

CHAPTER 2: PROTOCOL ARCHITECTURE, TCP/IP, AND INTERNET-BASED APPLICATIONS

TRUE OR FALSE

T F 1. Each protocol provides a set of rules for the exchange of data between systems.

T F 2. The OSI protocol architecture consists of five layers: physical, network access, internet, transport and application.

T F 3. Procedures needed to allow data to traverse multiple interconnected networks is found in the internet layer of the TCP/IP protocol architecture.

T F 4. The primary function of a gateway is to relay data from one network to the other on its route from the source to the destination end system.

T F 5. For most applications running as part of the TCP/IP protocol architecture, the transport layer protocol is TCP.

T F 6. VoIP, streaming audio, and streaming video are not considered multimedia applications because each involves a single media type.

T F 7. The software used at the network access layer is not dependent on the type of network used because circuit switching, packet switching and local area networks all have the same standards.

T F 8. Traffic on a network or internet can be divided into two broad categories: elastic and inelastic.

T F 9. FTP provides a basic electronic mail transport facility.

T F 10. Secure Shell (SSH) enables the user and the remote server to authenticate each other.

T F 11. Distributed data communications can be said to involve three agents: applications, computers, and networks.

T F 12. The driving force behind the development of IP was the need for more addresses.

T F 13. It is not necessary for each host on a subnet to have an unique global internet address.

T F 14. TCP numbers the segments that it sends to a particular destination port sequentially.

T F 15. In the application layer of TCP/IP, for each different type of application, a separate module is needed that is peculiar to that application.

MULTIPLE CHOICE

1. In a _____ the modules are arranged in a vertical stack. Each layer in the stack performs a related subset of the functions required to communicate with another system.

   A) protocol architecture B) NSP

   C) protocol data unit D) frame relay

2. Facsimile, computer aided design, publishing and medical imaging are all _____ based applications.

   A) text B) image

   C) video D) audio

3. The _____ layer contains the logic needed to support the various user applications.

   A) internet B) physical

   C) transport D) application

4. The key features of a protocol are: syntax, semantics and _____.

   A) presentation B) timing

   C) network access D) peer layering

5. The _____ protocol architecture is a result of protocol research and development conducted on the experimental packet switched network ARPANET.

   A) internet B) physical

   C) host-to-host D) network access

6. The _____ layer is concerned with the exchange of data between an end system and the network to which it is attached.

   A) internet B) physical

   C) host-to-host D) network access

7. An example of _____ traffic is real time traffic such as voice and video.

   A) delay variation B) elastic

   C) multimedia information D) inelastic

8. Human-computer interaction involving text, graphics, voice and video is _____.

   A) elastic traffic B) multimedia

   C) information delivery D) media

9. The primitive issued by a service provider to either indicate that a procedure has been invoked by the peer service user on the connection and to provide the associated parameters or notify the service user of a provider initiated action is _____.

   A) request B) confirm

   C) indication D) response

10. Information that can be entered via a keyboard and is directly readable and printable is _____.

    A) audio B) graphic

    C) video D) text

11. The header format for TCP is a minimum of _____ octets.

A) 16 B) 8

C) 20 D) 160

12. _____ provides a basic electronic mail transport facility.

A) TELNET B) SNMP

C) UDP D) SMTP

13. Electronic mail, remote logon, network management and Web access are examples of _____ applications.

A) elastic B) real-time

C) file transfer D) transport

14. The communication task can be organized into three relatively independent layers: network access layer, application layer, and _____ layer.

A) transport B) media

C) physical D) processing

15. Computer games, multiplayer network games, infotainment, and interactive audio visual productions are examples of applications in the _____ domain of multimedia systems.

A) information management B) information publishing

C) telecommunication D) entertainment

SHORT ANSWER

1. A _____ is the layered structure of hardware and software that supports the exchange of data between systems and supports distributed applications such as electronic mail and file transfer.

2. The most widely used protocol architecture is the _____ protocol suite, which consists of physical, network access, internet, transport, and application layers.

3. In the TCP/IP protocol architecture, the _____ layer is concerned with specifying the characteristics of the transmission medium, the nature of the signals and the data rate.

4. Traffic that can adjust to changes in delay and throughput across an internet and still meet the needs of its applications is _____ traffic.

5. Databases, information kiosks, hypertexts, electronic books, and multimedia expert systems are examples of multimedia _____ systems.

6. _____ provides a secure remote logon capability which enables a user at a terminal or personal computer to logon to a remote computer function as if directly connected to that computer.

7. The services between adjacent layers in a protocol architecture are expressed in terms of _____ and parameters.

8. If the initiator receives confirmation that the requested service has had the desired effect at the other end, it is referred to as a _____ service.

9. Each application on a computer has an address that is unique within that computer known as _____ or ports that allow the transport layer to support multiple applications at each computer.

10. The addiction of control information to data is referred to as _____.

11. In the TCP/IP architecture constituent networks are referred to as _____.

12. _____ is when the sending TCP includes a code that is a function of the contents of the remainder of the segment. The receiving TCP performs the same calculation and compares the result with the incoming code. A discrepancy results if there has been some error in transmission.

13. The standard network management protocol for TCP/IP networks is _____.

14. The two commonly used transport level protocols used as part of the TCP/IP protocol suite are TCP and _____.

15. IPv6 includes _____ bit source and destination address fields.