

Chapter 01: Introduction to Data Communications and Computer Networks

1. Data is information that has been translated into a form that is more conducive to storage, transmission, and calculation.

- a. True
- b. False

ANSWER: True

2. The connection between workstations and the Internet in an enterprise network is handled by a client/ server system.

- a. True
- b. False

ANSWER: True

3. A desktop computer cannot be connected to a local area network using a wireless connection.

- a. True
- b. False

ANSWER: False

4. Many years ago, most home users connected their computer to the Internet via a dial-up telephone line and a modem, but now the more common connection is using DSL.

- a. True
- b. False

ANSWER: True

5. It is not possible to connect two local area networks so that they can share peripherals as well as software.

- a. True
- b. False

ANSWER: False

6. Metropolitan area networks can transfer data at fast LAN speeds, but over smaller geographic regions than typically associated with a local area network.

- a. True
- b. False

ANSWER: False

7. The Internet is not a single network but a collection of thousands of networks.

- a. True
- b. False

ANSWER: True

8. The most recent “telephone” networks can now deliver voice, Internet, and television over a single connection.

- a. True
- b. False

ANSWER: True

9. Analog signals are transmitted over conducted media, while digital signals are transmitted over radiated media.

- a. True

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b. False

ANSWER: False

10. Network architectures are cohesive layers of protocols defining a set of communication services.

a. True

b. False

ANSWER: True

11. The OSI model tells us what kind of wire or what kind of connector to use to connect the pieces of a network.

a. True

b. False

ANSWER: False

12. The application layer of the OSI model is responsible for token management.

a. True

b. False

ANSWER: False

13. The session layer of the OSI model is responsible for establishing synchronization points.

a. True

b. False

ANSWER: True

14. The network layer of the OSI model is an end-to-end layer.

a. True

b. False

ANSWER: False

15. The data link layer of the OSI model can incorporate some form of error detection software.

a. True

b. False

ANSWER: True

16. The TCP/IP protocol suite does not have rigidly defined layers as the OSI model does.

a. True

b. False

ANSWER: True

17. SNMP is used to allow users to send and receive electronic mail.

a. True

b. False

ANSWER: False

18. The lowest layer of the TCP/IP protocol suite is the network access or physical layer.

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- a. True
- b. False

ANSWER: True

19. In a network architecture, as the packet moves *up* through the layers, the data packet shrinks in size.

- a. True
- b. False

ANSWER: True

20. SaaS is a cloud service that provides access to an application that runs in the cloud environment.

- a. True
- b. False

ANSWER: True

21. A ____ is an interconnection of computers and computing equipment using either wires or radio waves over small geographic areas.

- a. personal area network (PAN)
- b. computer network
- c. wireless network
- d. local area network (LAN)

ANSWER: d

22. ____ is the transmission of multiple signals on one medium.

- a. Multiplexing
- b. Codec
- c. Modem
- d. Package

ANSWER: a

23. ____ is the design, installation, and support of a network and its hardware and software.

- a. Cloud computing
- b. Voice network
- c. Data network
- d. Network management

ANSWER: d

24. ____ are the computers that store network software and shared or private user files.

- a. Switches
- b. Routers
- c. Servers
- d. Hubs

ANSWER: c

25. ____ are points for the wires that interconnect the workstations of a LAN.

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- a. Switches
- b. Routers
- c. Servers
- d. Workstations

ANSWER:

a

26. A _____ is a device that connects to a computer network being either an endpoint or network device.

- a. server
- b. workstation
- c. switch
- d. node

ANSWER:

d

27. In a(n) _____ system, a user at a computer, or client machine, issues a request for some form of data or service.

- a. wireless
- b. client/server
- c. bridge
- d. Internet

ANSWER:

b

28. _____ allows some underlying configuration, but developers can mostly focus on their development work without having to devote time to managing a network infrastructure.

- a. XaaS
- b. PaaS
- c. SaaS
- d. IaaS

ANSWER:

b

29. The Internet “talks” only _____, so users must use software that supports this protocol.

- a. IPX/SPX
- b. DSL
- c. TCP/IP
- d. FTP

ANSWER:

c

30. The devices that usually connect two or more LANs are the switch and _____.

- a. workstation
- b. subnetwork
- c. server
- d. router

ANSWER:

d

31. The _____ is a subset of personal area networks.

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- a. LAN
- b. CAN
- c. BAN
- d. MAN

ANSWER:

c

32. A ____ is a high-speed network that interconnects multiple sites within a close geographic region, such as a large urban area.

- a. metropolitan area network (MAN)
- b. wide area network (WAN)
- c. local area network (LAN)
- d. personal area network (PAN)

ANSWER:

a

33. Connecting two wide area networks requires devices such as high-speed ____.

- a. switches
- b. routers
- c. bridges
- d. reflectors

ANSWER:

b

34. In the context of cloud computing, ____ means that resources can be increased or decreased quickly in response to changing needs.

- a. scalability
- b. pay-as-you-go
- c. self-service
- d. elasticity

ANSWER:

d

35. ____ is the reference model to standardize the design of communication systems and the interoperability between their components.

- a. OSI
- b. TCP/IP
- c. FTP
- d. ASCII

ANSWER:

a

36. The ____ layer of the OSI model makes sure the data received at the very end of a transmission is exactly the same as the data originally transmitted.

- a. application
- b. session
- c. transport
- d. network access

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ANSWER:

c

37. The ____ layer of the OSI model performs a series of miscellaneous functions necessary for presenting the data package properly to the sender or receiver.

- a. transport
- b. presentation
- c. applications
- d. session

ANSWER:

b

38. The ____ layer is the OSI layer that handles routing.

- a. network
- b. application
- c. transport
- d. session

ANSWER:

a

39. The ____ layer of the OSI model is responsible for taking data from the network layer and transforming it into a frame.

- a. transport
- b. physical
- c. data link
- d. session

ANSWER:

c

40. The ____ layer of the OSI model ensures that the data packet arriving at the final destination is identical to the data packet that left the originating station.

- a. transport
- b. data link
- c. physical
- d. session

ANSWER:

a

41. The ____ layer of the TCP/IP protocol suite is not a logical connection.

- a. application
- b. physical
- c. transport
- d. network

ANSWER:

b

42. The bottom layer in the OSI model—the ____ layer—handles the transmission of bits over a communications channel.

- a. data link
- b. application
- c. physical

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d. network

ANSWER:

c

43. The _____ was not created by a standards-making organization but by a group of computer scientists.

- a. OSI model
- b. FTP protocol
- c. Relapse protocol
- d. TCP/IP protocol suite

ANSWER:

d

44. The TCP/IP _____ layer supports network applications and may include presentation services.

- a. transport
- b. application
- c. network
- d. network access

ANSWER:

b

45. _____ is used to allow the numerous elements within a computer network to be managed from a single point.

- a. Simple Network Management Protocol (SNMP)
- b. Simple Mail Transfer Protocol (SMTP)
- c. Telnet
- d. File Transfer Protocol (FTP)

ANSWER:

a

46. The TCP/IP _____ layer commonly uses the Transmission Control Protocol (TCP) to maintain an error-free end-to-end connection.

- a. network
- b. network access
- c. transport
- d. application

ANSWER:

c

47. The TCP/IP _____ layer, sometimes called the Internet layer, is roughly equivalent to OSI's network layer.

- a. network access
- b. application
- c. transport
- d. network

ANSWER:

d

48. A(n) _____ connection is a nonphysical connection between sender and receiver that allows an exchange of commands and responses.

- a. physical
- b. encapsulated

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- c. real
- d. logical

ANSWER: d

49. The addition of control information to a packet as it moves through the layers is called ____.

- a. encapsulation
- b. overloading
- c. payload
- d. filtering

ANSWER: a

50. In the context of cloud computing, ____ refers to the ability of resources to be adjusted over time in response to changing needs.

- a. scalability
- b. pay-as-you-go
- c. self-service
- d. elasticity

ANSWER: a

51. Computer networks that use radio waves are termed _____ and can involve broadcast radio, microwaves, or satellite transmissions.

ANSWER: wireless

52. _____ are personal computers or smartphones where users connect to computer networks.

ANSWER: Workstations

53. _____ are sets of rules used by communication devices to format signals transmitted.

ANSWER: Protocols

54. Metropolitan area networks are a cross between local area networks and _____ networks.

ANSWER: wide area

55. A(n) _____ converts the local area network data into wide area network data.

ANSWER: router

56. A(n) _____ is what you need to run a program that is only available in a Windows computer into a computer with a different Operating System (OS).

ANSWER: virtual machine

57. _____ systems is promoting a revolution in the way datacenters and networks function.

ANSWER: Cloud computing

58. A(n) _____, or communications model, places the appropriate network pieces in layers.

ANSWER: network architecture

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59. The two most common architectures known today are the Open Systems Interconnection (OSI) model and the _____ protocol suite.

ANSWER: TCP/IP

60. The OSI model consists of seven layers: application, presentation, session, _____, network, data link, and physical.

ANSWER: transport

61. The top layer in the OSI model is the _____ layer, where the application using the network resides.

ANSWER: application

62. The _____ layer of the OSI model is responsible for establishing sessions between users.

ANSWER: session

63. _____ are backup points that are used in case of errors or failures.

ANSWER: Synchronization points

64. The _____ layer of the OSI model is responsible for creating, maintaining, and ending network connections.

ANSWER: network

65. The _____ layer of the OSI model is responsible for taking data from the network layer and transforming it into a cohesive unit called a frame.

ANSWER: data link

66. The _____ protocol suite incorporates the TCP and IP protocols and has in fact always been more popular than the OSI model.

ANSWER: TCP/IP

67. _____ is used to transfer files from one computer system to another.

ANSWER: File Transfer Protocol (FTP)
File Transfer Protocol
FTP

68. _____ is used to allow Web browsers and servers to send and receive web pages.

ANSWER: Hypertext Transfer Protocol (HTTP)
Hypertext Transfer Protocol
HTTP

69. The _____ is the software that prepares a packet of data so that it can move from one network to another on the Internet or within a set of corporate networks.

ANSWER: Internet Protocol
Internet Protocol (IP)
IP

70. The _____ connection is the only direct connection between sender and receiver and is at the physical layer, where actual 1s and 0s are transmitted over wires or airwaves.

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ANSWER: physical

71. The _____ layer of the TCP/IP protocol suite is responsible for making sure that what leaves one end of the network arrives at the other end of the network exactly the same.

ANSWER: transport

72. What is data communications?

ANSWER: We will define data communications as the transfer of digital or analog data using digital or analog signals. Once created, these analog and digital signals then are transmitted over conducted media or wireless media. Both the data and the signal can be analog or digital, allowing for four possible combinations. Transmitting analog data by analog signals and digital data by digital signals are fairly straightforward processes—the conversion from one form to another is relatively simple. Transmitting digital data using analog signals, however, requires the digital data to be modulated onto an analog signal, which is what happens with a modem and the telephone system. Transmitting analog data using digital signals requires the data to be sampled at specific intervals and then digitized into a digital signal, which is what happens with a device called a digitizer or codec.

73. What are the components of a wide area network?

ANSWER: Wide area networks also can be of many types. Although many different technologies are used to support wide area networks, all wide area networks include the following components:

- * Nodes, which are the computing devices that allow workstations to connect to the network and that make the decisions about where to route a piece of data
- * Some type of high-speed transmission line, which runs from one node to another
- * A sub-network, which consists of the nodes and transmission lines, collected into a cohesive unit

74. What are cloud networks?

ANSWER: Cloud networks are essentially networks that promote remote access to virtualized resources hosted in a software-defined environment using cloud computing characteristics. In such a way, cloud networks connect resources that are said to reside “in the cloud”, that is to say, resources that are provided by virtualization.

75. What is the main advantage of cloud computing?

ANSWER: Cloud computing relies on the abstraction of compute, network, security, and storage functions away from the underlying physical hardware in ways that give network admins and other IT professionals almost unlimited resources at affordable prices.

76. What kind of network is a cellular network, and what kind of infrastructure does it require?

ANSWER: A cellular network is the infrastructure that is needed to support modern smartphones and the myriad of functions currently available, such as the traditional voice, text messages, pictures and videos download and upload, stream of music and video, and all sorts of Internet access. The network infrastructure that is needed to support cellular networks includes cell towers that cover several places throughout the globe. These cell towers are tied together into some form of network managed by smartphone service providers.