Review Questions

1. In the client-server model, what is the primary secure protocol used for communication between a browser and web server?

    a. HTTPS

    b. TLS

    c. HTTP

    d. SSL

    Answer: a. HTTPS

    Explanation: The primary protocol used by web servers and browsers (clients) is HTTP (Hypertext Transfer Protocol). When HTTP is layered on top of an encryption protocol, such as SSL (Secure Sockets Layer) or TLS (Transport Layer Security), the result is **HTTPS (HTTP Secure)**, which gives a secure transmission.

2. Which two encryption protocols might be used to provide secure transmissions for email services?

    a. HTTP and HTTPS

    b. SSL and TLS

    c. FTP and SFTP

    d. SSH and RDP

    Answer: b. SSL and TLS

    Explanation: The email protocols SMTP, POP3, and IMAP4 are all available over **SSL or TLS** for security. HTTP and HTTPS provide communication between web servers and browsers. FTP and SFTP support the transfer of files between two computers. SSH and RDP provide secure, encrypted remote access from one computer to another.

3. Which of the following applications could be used to run a website from a server?

    a. Hypertext Transfer Protocol

    b. FileZilla

    c. Microsoft Exchange Server

d. Ngnix

Answer: d. Ngnix

Explanation: **Ngnix** is one of the most popular web server applications in the world. Hypertext Transfer Protocol is a protocol used to communicate between web servers and web clients. FileZilla is an FTP client application. Microsoft Exchange Server is a popular email server application.

4. As you're working to fix a problem with an application, you make multiple changes at once hoping that something will solve the issues you're having. You end up with more problems than when you started. Which step, if followed correctly, would have prevented this complication?

    a. Identify the problem.

    b. Test the theory to determine the cause.

    c. Establish a plan of action to resolve the problem and identify potential effects.

    d. Document findings, actions, outcomes, and lessons learned.

    Answer: a. Identify the problem.

    Explanation: While **identifying the problem**, approach each problem individually and solve it before moving on to the next. By the time you reach the steps of testing the theory, establishing a plan of action, and documenting results, solving multiple problems at once is likely already causing more problems.

5. In the event of a fire, the most appropriate failure policy is a _____ policy.

    a. Power-off

    b. Fail-close

    c. Fail-open

    d. Shutdown

    Answer: c. Fail-open

    Explanation: During a fire alert using a **fail-open** policy, all exit doors stay unlocked so that people can safely leave the building and firefighters can enter the building, even though this might present a security risk for thieves entering the building. A fail-close policy would lock people inside the burning building. An emergency power-off switch can quickly shut down a

data center's computers, although improper shutdowns are hard on computers and their data.

6. A network consists of five computers, all running Windows 10 Professional. All the computers are connected to a switch, which is connected to a router, which is connected to the Internet. Which logical networking model does the network use?

    a. Hub-and-spoke

    b. Ring

    c. Hybrid

    d. Peer-to-peer

    Answer: d. Peer-to-peer

    Explanation: Using a **P2P (peer-to-peer) network model**, the operating system of each computer on the network is responsible for controlling access to its resources without centralized control. The computers, called nodes or hosts on the network, form a logical group of computers and users that share resources. The hub-and-spoke, ring, and hybrid models are all physical topologies, not logical topologies.

7. In Question 6, suppose one computer is upgraded from Windows 10 Professional to Windows Server 2019. Which networking model can the network now support that it could not support without the upgrade?

    a. Hybrid

    b. Client-server

    c. Hub-and-spoke

    d. Peer-to-peer

    Answer: b. Client-server

    Explanation: In the **client-server** network model, resources can be managed by Windows Server 2019 via a centralized directory database called AD (Active Directory). The peer-to-peer network model is possible without Windows Server 2019 or any other NOS. Hybrid and hub-and-spoke models are physical topologies, not logical topologies.

8. A network consists of seven computers and a network printer, all connected directly to one switch. Which network topology does this network use?

    a. Client-server

    b. Mesh

c. Hub-and-spoke

d. Star

Answer: d. Star

Explanation: In a **star** topology, all devices connect to one central device such as a switch. In a mesh topology, each device connects to multiple other devices. In a hub-and-spoke topology, a central switch connects to multiple peripheral switches that each connect to computers in their areas. A client-server network model is a logical topology, not a physical topology.

9. You need to access customer records in a database as you're planning a marketing campaign. What language can you use to pull the records most relevant to the campaign?

    a. FTP

    b. SQL

    c. SMTP

    d. TLS

    Answer: b. SQL

    Explanation: Many DBMSs use the programming language **SQL (Structured Query Language)** to configure and interact with the database's objects and data. FTP (File Transfer Protocol) service is a client-server application that transfers files between two computers. Email clients use SMTP (Simple Mail Transfer Protocol) to send email message to an email server, which then uses SMTP again to transfer email to the recipient's email server. TLS (Transport Layer Security) is an encryption protocol used to secure other protocols.

10. Which of the following is an application layer protocol?

    a. IP

    b. RDP

    c. TCP

    d. Apache

    Answer: b. RDP

    Explanation: Several protocols are used at the application layer, including HTTP (Hypertext Transfer Protocol), SMTP (Simple Mail Transfer Protocol), POP3 (Post Office Protocol, version

3), IMAP4 (Internet Message Access Protocol, version 4), FTP (File Transfer Protocol), Telnet, and **RDP (Remote Desktop Protocol)**. Application layer protocols are used by applications and system utilities. IP (Internet Protocol) is a network layer protocol. TCP (Transmission Control Protocol) is a transport layer protocol. Apache is a web server application.

11. What is the name of the domain controller database that Windows Server 2019 uses to store data about user access and resources on the network?

    Answer: Active Directory

12. What is the fundamental distinction between a layer 2 switch and a router?

    Answer: A layer 2 switch belongs only to its local network, and a router belongs to two or more networks.

13. What is the fundamental distinction between a node and a host?

    Answer: A host is an endpoint device that hosts or accesses a resource on the network, and a node is any computer or device that can be addressed on the network.

14. What is the fundamental distinction between a MAN and a WAN?

    Answer: A WAN covers a large geographical area, and a MAN covers a smaller, more defined geographical area.

15. List two protocols that function at the transport layer of the OSI model. What type of address do these protocols add to their headers, and what element does that address identify?

    Answer: TCP (Transmission Control Protocol) and UDP (User Datagram Protocol)

    Answer: The port addresses the receiving application.

16. At the network layer, what type of address is used to identify the receiving host?

    Answer: IP address

17. At the data link layer, which type of network address is used to identify the receiving node?

    Answer: Physical address, MAC address, hardware address, or data link layer address

18. A computer is unable to access the network. When you check the LED lights near the computer's network port, you discover the lights are not lit. Which layer of the OSI model are you using to troubleshoot this problem? At which two layers does the network adapter work?

    Answer: Physical layer

Answer: Data link layer and physical layer

19. A user complains that their computer cannot access email, although the computer can access websites. At which layer of the OSI model should you begin troubleshooting this problem and why?

    Answer: Application layer—Email protocols such as SMTP, POP3, and IMAP4 all function at the application layer.

20. While troubleshooting a problem, you realize the problem is caused by a complex series of issues that will affect a large number of users even to test your theory as to the cause, and that process won't even solve the problem. What should you do next in the troubleshooting process?

    Answer: Escalate the problem