

Name _____ Date _____

Module 15 – Application Layer

Introduction to Networks – Semester 1

Teacher Version

Module 15 Sections:

- 15.0 Introduction
- 15.1 Application, Presentation, and Session
- 15.2 Peer-to-Peer
- 15.3 Web and Email Protocols
- 15.4 IP Addressing Services
- 15.5 File Sharing Services
- 15.6 Module Practice and Quiz

Required Materials:

Reading Organizer

Packet Tracer Activities: None

Labs: 15.4.8 - Observe DNS Resolution

Module's 14 – 15 Exam

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Note: The Reading Organizer has weighted scoring. Any question with the word **explain, define, or describe** in it is expected to have a longer answer and is worth two points each.

After completion of this chapter, you should be able to:

- Explain how the functions of the application layer, presentation layer, and session layer work together to provide network services to end user applications.
- Explain how end user applications operate in a peer-to-peer network.
- Explain how web and email protocols operate.
- Explain how DNS and DHCP operate.
- Explain how file transfer protocols operate.

15.1 Application, Presentation, and Session

1. In the OSI and the TCP/IP models, the application layer is the closest layer to the _____ user.
2. What are the application layer protocols are used to do?
3. List some of the most widely known application layer protocols.
 - a.
 - b.
 - c.
 - d.
 - e.

4. Describe the presentation layer's three primary functions.

a.

b.

c.

5. List some of the presentation layer's well-known standards for video formats.

a.

b.

c.

6. List some of the presentation layer's well-known standards for graphic image formats.

a.

b.

c.

7. Explain the functions at the session layer.

8. Name the application protocol type that belongs to each protocol listed.

Name System –

a.

Host Config –

a.

b.

Email –

a.

b.

c.

File Transfer –

a.

b.

Web –

a.

b.

15.2 Peer-to-Peer

9. TCP/IP application layer protocols implemented on both the source and destination host must be _____.

10. In the client/server model, the device requesting the information is called a _____ and the device responding to the request is called a _____.

11. The peer-to-peer (P2P) network model involves two parts. These are?

a.

b.

12. Every connected P2P end device (known as a peer) can function as both a _____ and a _____.

13. List several common P2P networks.

- a.
- b.
- c.
- d.

14. When clients using specific P2P software to ask for pieces of a file from multiple users at the same time it is known as a _____ and the technology is called BitTorrent.

15.3 Web and Email Protocols

15. Describe the four steps that show how web browsers and web server interact.

Step 1 –

Step 2 –

Step 3 –

Step 4 –

16. HTTP is a _____/_____ protocol.

17. List and describe the three common messages used by HTTP.

a. _____ -

b. _____ -

c. _____ -

18. What protocol should you use for secure communication across the internet?

19. Email is a _____ method of sending, storing, and retrieving electronic messages across a network.

20. List and describe how the three separate protocols used for email operate.

a. _____ -

b. _____ -

c. _____ -

15.4 IP Addressing Services

21. In data networks, devices are labeled with numeric IP addresses to send and receive data over networks. Why were domain names created?

22. Describe the five step process DNS uses.

Step 1 –

Step 2 –

Step 3 –

Step 4 –

Step 5 –

23. The DNS client service on Windows PCs stores previously resolved names in memory. What is the DOS command that displays all of the cached DNS entries?

24. The DNS protocol uses a _____ system to create a database to provide name resolution.

25. Computer operating systems have a utility called _____ that allows the user to manually query the name servers to resolve a given host name.

26. The Dynamic Host Configuration Protocol (DHCP) for IPv4 service automates the assignment of IPv4 addresses, subnet masks, gateways, and other IPv4 networking parameters. What is this referred to as?

27. When a host connects to the network, the DHCP server is contacted, and an address is requested. The DHCP server chooses an address from a configured range of addresses called a _____ and assigns (leases) it to the host.

28. DHCP can allocate IP addresses for a configurable period of time, called a _____.

29. What happens when the lease period expires or the DHCP server gets a DHCPRELEASE message?

30. Many networks use both DHCP and static addressing. Describe how both of these addressing tools are used.

a. DHCP –

b. Static –

31. When an IPv4, DHCP-configured device boots up or connects to the network, the client broadcasts a DHCP discover _____ message to identify any available DHCP servers on the network. A DHCP server replies with a DHCP offer _____ message, which offers a lease to the client.

32. The DHCP server ensures that all IP addresses are _____.

33. List the DHCPv6 messages.

a.

b.

c.

d.

15.5 File Sharing Services

34. What was FTP was developed to allow?

35. The client establishes the first connection to the server for _____ using TCP port _____.

36. The client establishes the second connection to the server for the actual _____ using TCP port _____.

37. Explain what a Server Message Block (SMB) is.

38. What are three functions of SMB messages:

a.

b.

c.

39. Unlike the file sharing supported by FTP, clients establish a long-term connection to servers. Explain.