Section 1

What is layer 4 of the OSI model called?

(A) Session layer
(B) Data-link layer
(C) Transport layer
(D) Application layer

2. What layer of the OSI model is responsible for ensuring data is in the correct syntax?

(A) Presentation layer
(B) Session layer
(C) Network layer
(D) Application layer

3. What means of identifying a device on a local subnet can be found at layer 2 of the OSI model?

(A) IP addresses
(B) MAC addresses
(C) Host names
(D) Port numbers

4. The port number range of 0 - 1024 is referred to as what?

(A) Ephemeral
(B) Well known
(C) Registered
(D) Dynamic

5. What protocol guarantees delivery of data through the use of acknowledgments and sequence numbers?

(A) TCP
(B) UDP
(C) IP
(D) IPX

6. What logical port number is assigned to the NTP?

(A) 23
(B) 123
(C) 443
(D) 3389

7. What is the second step of the three-way handshake?

(A) FIN
(B) ACK
(C) SYN
(D) SYN/ACK

8. What organization assigns port numbers?

(A) IEEE
(B) OSI
(C) IANA
(D) IETF

9. What layer of the OSI model is responsible for the routing of traffic?

(A) Transport layer
(B) Data-link layer
(C) Session layer
(D) Application layer

10. Which of these can be found on the data-link layer? Choose two.

(A) MAC
(B) SMTP
(C) DNS
(D) LLC

Section 2

1. Which of these is not a layer of the TCP/IP model?

(A) Network layer
(B) Data-link layer
(C) Transport layer
(D) Application layer

2. Which of these is classed as a support service?

(A) DNS
(B) FTP
(C) TFTP
(D) SMTP

3. Which of these standards relates to Ethernet?

(A) IEEE 802.1x
(B) IEEE 802.3
(C) IEEE 802.5
(D) IEEE 802.11

4. Which of these is an internet layer protocol?

(A) PPP
(B) FTP
(C) ICMP
(D) SMTP

5. Which protocol is used to create logical groups of devices?

(A) ARP
(B) ICMP
(C) IGMP
(D) IP

6. Which layer is responsible for controlling communications between hosts?

(A) Transport
(B) Data-link
(C) Application
(D) Network

7. Breaking data into parts to meet MTU requirements is known as what?

(A) Encapsulation
(B) Deencapsulation
(C) Fragmentation
(D) Defragmentation

Section 3

Which of the following is a public IP address?

(A) 126.56.23.0
(B) 172.16.0.1
(C) 10.4.2.89
(D) 172.30.45.23

2. What is the decimal representation of the binary number 1101010?

(A) 101
(B) 206
(C) 106
(D) 201

3. The last IP address in a network range is known as a what?

(A) APIPA
(B) Network address
(C) Broadcast address
(D) Private address

4. If you need a network with at least 256 hosts on it, how many bits would you need for the host element?

(A) 8
(B) 9
(C) 10
(D) 11

5. What protocol is used to issue an IP address automatically?

(A) APIPA
(B) DHCP
(C) ARP
(D) DNS

6. Which of these is a Class B private IP address?

(A) 10.0.0.1
(B) 192.168.34.2
(C) 10.234.56.1
(D) 172.16.9.90

7. Which of these is not a valid subnet mask?

(A) 255.124.0.0
(B) 255.255.128.0
(C) 255.255.255.192
(D) 255.255.255.252

8. You wish to add a new host to a network. One of the hosts that's currently on the network has an IP address of 187.34.23.6 and a subnet mask of 255.255.255.240. Which of the following IP addresses can I allocate to the new host?

(A) 187.34.23.0
(B) 187.34.23.6
(C) 187.34.23.14
(D) 187.34.23.15

Section 4

1. How many bits are in an IPv6 address?

(A) 6
(B) 32
(C) 64
(D) 128

2. Which of these is a valid IPv6 address?

(A) 2001:AG10:0256:7623:ABCD:1FA8:22EE:1908
(B) 2001:87F6:1234
(C) 2001:AC10:0256:7623:ABCD:1FA8:22EE:1908
(D) 2001:AC10:0256:7623:ABCD:::22EE:1908

3. What is the prefix for a global unicast address?

(A) 2000::/3
(B) FE80::/10
(C) FC00::/7
(D) FF00::/8

4. What is the IPv6 loopback address?

(A) 127.0.0.1
(B) 127::1
(C) ::1
(D) 127::127

5. Which method of configuring IPv6 addresses uses RS?

(A) DHCPv6
(B) Manual
(C) SLAAC
(D) None of the methods use RS

6. Which of these is the full representation of the following shortened IPv6 address: 2001:34:0:0:AB76::4BC2?

(A) 2001:3400:0000:0000:AB76:0000:0000:4BC2
(B) 2001:0034:0000:0000:AB76:0000:0000:4BC2
(C) 2001:0034:0000:AB76:0000:0000:0000:4BC2
(D) 2001:0034:0:0:AB76:0:0:4BC2

7. Which type of transmission sends data to only one device out of a predefined group of devices?

(A) Anycast
(B) Unicast
(C) Broadcast
(D) Multicast

8. Which service allows IPv6 communication between devices on NAT-enabled networks and uses UDP for encapsulation?

(A) 6to4
(B) ISATAP
(C) Dual stack
(D) Teredo

Section 5

1. **What type of DNS record is used for IPv6 addresses?**
   (A) A record
   (B) NS record
   (C) AAAA record
   (D) Av6 record

2. **What port and transport layer protocol do DNS zone transfers use?**
   (A) TCP, port 53
   (B) UDP, port 53
   (C) TCP, port 23
   (D) UDP, port 23

3. **Looking at the following FQDN, what is the domain? For example, www.example.com.**
   (A) www
   (B) example
   (C) com
   (D) .

4. **If you wanted to manually configure a static name resolution of an FQDN that would only be used by a single client, what would you use?**
   (A) DNS
   (B) The hosts file
   (C) WINS
   (D) LMHOSTS

5. **Which of these allow you to resolve a device's IP address, even if it is across the internet? Choose two.**
   (A) DNS
   (B) The hosts file
   (C) WINS
   (D) LMHOSTS

6. **What type of DNS query will attempt to redirect you to the root domain name servers if it cannot resolve the IP address?**
   (A) Iterative
   (B) Recursive
   (C) WINS
   (D) Hosts

7. **If you wanted to clear your device's DNS cache, what command would you use?**
   (A) ipconfig /dnsclear
   (B) ipconfig /cleandns
   (C) ipconfig /dnsflush
   (D) ipconfig /flushdns

8.   What name resolution requires a server to resolve a NetBIOS name?

(A) DNS

(B) The hosts file

(C) WINS

(D) LMHOSTS

9.   Which of these prefixes would you include in an LMHOSTS file to instruct the system to preload the address/name mapping into its cache?

(A) PRE

(B) PLD

(C) PDC

(D) IPPRE

10.   When using nslookup in interactive mode, what command would you use to configure the details of the DNS you would like it to query?

(A) set server =<IPaddress>

(B) server set=<IPaddress>

(C) set server <IPaddress>

(D) server <IPaddress>

Section 6

1. Stephen wants to use FTP on his network. Which pair of ports should he have open on his firewall to allow this traffic through?

(A) 20 and 21
(B) 21 and 22
(C) 22 and 23
(D) 23 and 25

2. What happens when a device cannot renew its IP address lease?

(A) It retains the IP address it was originally issued.
(B) It receives a 169.254.x.x address.
(C) It receives a 127.0.0.1 address.
(D) It receives a 0.0.0.0 address.

3. Dani needs to ensure that a DHCP-enabled device receives the same IP address from the DHCP server each time. What should she configure?

(A) Reservation.
(B) Exclusion.
(C) MAC filtering.
(D) It is not possible to do this with DHCP.

4. In the following UNC example, what is the server name? Here is an example: \\mail\finance

(A) \\
(B) mail
(C) \
(D) Finance

5. Steve is a member of the following groups: Sales, Marketing, Managers. Each of these groups has been allocated the following share permissions on a folder:
Sales: Read
Marketing: Change
Managers: Read
What is Steve's effective permission?

(A) Read
(B) Read and Change
(C) Change
(D) Full

6. When looking at a user's NTFS permissions, you see a number of checkboxes are grayed out. What is the most likely cause of this?

(A) The user is not an administrator.
(B) The permissions are inherited.
(C) You are not an administrator.
(D) Permissions can only be changed by the user themselves.

7. You want to change the NTFS permissions on a file and right-click and choose Properties. You notice that the Security tab is not visible. What is the most likely reason for this?

(A) The underlying filesystem is FAT.
(B) You are not an administrator.
(C) The Security tab is not normally visible in the file properties dialog box.
(D) The file is encrypted.

8. You want to create a hidden share called Marketing. What would you use as the share name?

(A) Marketing*
(B) Marketing!
(C) Marketing%
(D) Marketing$

Guide homework

What is layer 4 of the OSI model called?

a. Session layer

b. Data-link layer

c. Transport layer

d. Application layer

1   **What layer of the OSI model is responsible for ensuring data is in the correct syntax**?

•   Presentation layer

•   Session layer

•   Network layer

•   Application layer

1   **What means of identifying a device on a local subnet can be found at layer 2 of the OSI model?**

•   IP addresses

•   MAC addresses

•   Host names

•   Port numbers

1   **The port number range of 0 - 1024 is referred to as what?**

•   Ephemeral

•   Well known

•   Registered

•   Dynamic

1   What protocol guarantees delivery of data through the use of acknowledgments and sequence numbers?

- <mark>TCP</mark>

- UDP

- IP

- IPX

1   What logical port number is assigned to the NTP?

- 23

- <mark>123</mark>

- 443

- 3389

1   What is the second step of the three-way handshake?

- FIN

- ACK

- SYN

- <mark>SYN/ACK</mark>
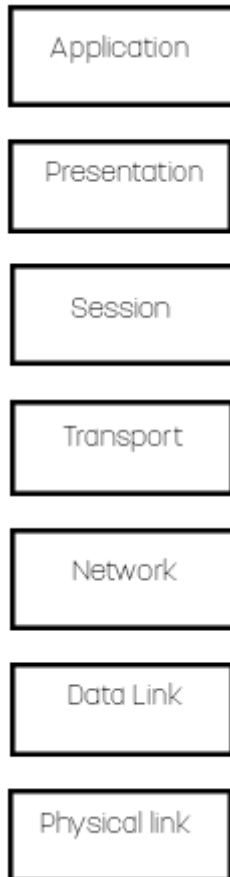

1   What organization assigns port numbers?

- IEEE

- OSI

- <mark>IANA</mark>

- IETF

1   What layer of the OSI model is responsible for the routing of traffic?

- Transport layer

- <mark>Data-link layer</mark>

- Session layer

- Application layer

-

Practical:

1   Create a graph explaining in detail the OSI model and ill its layers.

Application

Presentation

Session

Transport

Network

Data Link

Physical link

Using packet tracer setup, the following:

A local server connected to a Wi-Fi router

2 student desktops with LAN setup

3 student laptops setup with the Wi-Fi

The students must be able to ping each other on the network

Setting Up the Devices:

- **Router:** Add a wireless router to the workspace.

- **Server:** Add a server to the workspace and connect it to the router.

- **Desktops:** Add two PCs (desktops) to the workspace.

- **Laptops:** Add three laptops to the workspace.

2. Connecting the Devices:

- **Wired Connection (LAN):**

- o Use copper straight-through cables to connect the server and the two desktops to the router.

- o Connect each device to the appropriate LAN port on the router.

- **Wireless Connection (Wi-Fi):**

  - o For the laptops, ensure they are configured with a wireless network adapter (this is usually the default in Packet Tracer).

  - o Associate each laptop with the Wi-Fi network of the router.

3. Configuring the Router:

- **Basic Setup:**

  - o Click on the router and go to the "GUI" tab.

  - o Under "Setup," configure the **Network Name (SSID)** and set up a **Wireless Security** (e.g., WPA2-Personal) with a passphrase.

- **DHCP:**

  - o Enable DHCP on the router to automatically assign IP addresses to all connected devices.

  - o Ensure the DHCP pool covers enough addresses for all your devices.

4. Configuring the Server:

- Assign a **static IP address** to the server, within the same subnet as the router.

- Set the server to use the router's IP as the default gateway.

5. Configuring Desktops and Laptops:

- **Desktops:**

  - o Configure the network adapters of the two desktops to obtain an IP address automatically from the router (using DHCP).

- **Laptops:**

  - o Click on each laptop, go to the "Desktop" tab, and then "PC Wireless."

  - o Click "Connect" and select the router's SSID, entering the passphrase you configured.

  - o Ensure the laptops are also set to obtain an IP address automatically via DHCP.

6. Testing Connectivity:

- **Ping Test:**

  - o Open a command prompt on one of the desktops or laptops.

  - o Ping the IP addresses of the other devices (server, other desktops, laptops) to ensure they are all reachable.

- Each device should be able to ping every other device on the network, confirming successful connectivity.

7. Troubleshooting:

- If any device cannot ping another:

    - Check that the device has an IP address in the correct range.

    - Ensure the router is configured correctly and DHCP is working.

    - Verify that the wireless devices are connected to the correct SSID and that the Wi-Fi settings (security, passphrase) are correct.