# 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

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**Practical:**

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

****

# 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):**
  + Use copper straight-through cables to connect the server and the two desktops to the router.
  + Connect each device to the appropriate LAN port on the router.
* **Wireless Connection (Wi-Fi):**
  + For the laptops, ensure they are configured with a wireless network adapter (this is usually the default in Packet Tracer).
  + Associate each laptop with the Wi-Fi network of the router.

**3. Configuring the Router:**

* **Basic Setup:**
  + Click on the router and go to the "GUI" tab.
  + Under "Setup," configure the **Network Name (SSID)** and set up a **Wireless Security** (e.g., WPA2-Personal) with a passphrase.
* **DHCP:**
  + Enable DHCP on the router to automatically assign IP addresses to all connected devices.
  + 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:**
  + Configure the network adapters of the two desktops to obtain an IP address automatically from the router (using DHCP).
* **Laptops:**
  + Click on each laptop, go to the "Desktop" tab, and then "PC Wireless."
  + Click "Connect" and select the router’s SSID, entering the passphrase you configured.
  + Ensure the laptops are also set to obtain an IP address automatically via DHCP.

**6. Testing Connectivity:**

* **Ping Test:**
  + Open a command prompt on one of the desktops or laptops.
  + 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.