Chapter 02 How Computers Find Each Other on Networks

TRUEFALSE

1. A hexadecimal number is a number written in the base 16 number system.

(A) True

(B) False

Answer : (A)

2. DNS follows a centralized database model.

(A) True

(B) False

Answer : (B)

3. NetBIOS applications should be replaced as they are out-of-date.

(A) True

(B) False

Answer : (A)

4. ICANN is responsible for restrictions on use of the .com, .org, and .net TLDs.

(A) True

(B) False

Answer : (B)

5. Each organization that provides host services on the public Internet is responsible for providing and maintaining DNS authoritative servers for public access.

(A) True

(B) False

Answer : (A)

MULTICHOICE

6. An IPv6 address consists of how many bits?

(A) 32

(B) 48

(C) 96

(D) 128

Answer : (D)

7. A port number, which identifies an application on a host, exists at what level of the OSI model?

(A) Application

(B) Transport

(C) Network

(D) Data link

Answer : (B)

8. What are the last two parts of a host name known as?

(A) top level domain

(B) fully qualified domain name (FQDN)

(C) domain name

(D) host qualifier

Answer : (C)

9. What do the first 24 bits of a MAC address represent?

(A) Organizationally Unique Identifier

(B) device ID

(C) extension ID

(D) network ID

Answer : (A)

10. What command below can be used to display a complete summary of all network interfaces in a Windows computer?

(A) ipconfig /a

(B) ipconfig /all

(C) ipconfig /list

(D) ipconfig /show

Answer : (B)

11. What top level domain is used for the air-transport industry?

(A) .air

(B) .aero

(C) .tport

(D) .intl

Answer : (B)

12. How many clusters of root servers exist?

(A) 8

(B) 10

(C) 13

(D) 15

Answer : (C)

13. What range of ports is referred to as the "well-known" range of ports?

(A) 0-1023

(B) 1024-49151

(C) 49152-65535

(D) 500 - 1024

Answer : (A)

14. A loopback IP address begins with what number?

(A) 254

(B) 127

(C) 169

(D) 192

Answer : (B)

15. In Linux systems, what file contains the settings for the DHCP service?

(A) dhcpd.conf

(B) dhcp.ini

(C) dhcpd.cfg

(D) dhcp.cf

Answer : (A)

16. What command on Linux will display TCP/IP information associated with every interface on the device?

(A) ifconfig /all

(B) ifconfig -a

(C) ipconfig -a

(D) ipconfig /all

Answer : (B)

17. Select the IPv6 address below that indicates a global unicast address:

(A) FE80::10

(B) 2000::/3

(C) FC00::/7

(D) FD00::/8

Answer : (B)

18. Which protocol below is used to make an initial connection between hosts for transferring multimedia data, relying on other protocols once a connection is established?

(A) SMB

(B) SIP

(C) H.323

(D) NTP

Answer : (B)

19. The Network Time Protocol service uses what port number?

(A) TCP 123

(B) TCP 89

(C) UDP 123

(D) UDP 90

Answer : (C)

20. Select the name of the free, open source software that is by far the most popular DNS server software:

(A) Microsoft DNS

(B) BIND

(C) Oracle Resolver

(D) Dnsmasq

Answer : (B)

21. Select the protocol below that is used to synchronize clocks on computers on a network:

(A) SMTP

(B) NTP

(C) SIP

(D) CIFS

Answer : (B)

22. When two IPv6 nodes are on the same network, they are referred to as which of the following?

(A) adjacent

(B) neighbors

(C) collaborators

(D) friends

Answer : (B)

23. What utility is used to verify that TCP/IP installed, bound to the NIC, configured correctly, and communicating with the network?

(A) `traceroute`

(B) `ifconfig`

(C) `ping`

(D) `route`

Answer : (C)

24. What RFC outlines recommendations for private IP addresses?

(A) RFC 1900

(B) RFC 1918

(C) RFC 638

(D) RFC 2332

Answer : (B)

25. What protocol is commonly used to request configuration files from another computer?

(A) SNMP

(B) SIP

(C) SMB

(D) TFTP

Answer : (D)

SHORTANSWER

26. The MAC address, which is also known as the _____ address, is embedded on every NIC and is assumed to be unique.**Answer :** physical

27. A _____ is a DNS client that requests information from DNS name servers.**Answer :** resolver

28. A _____ consists of a host's IP address and the port number of an application running on

a host, with a colon separating the two values.**Answer :** socket

29. _____ are not used to find nodes on networks other than the local network.**Answer :** MAC addresses

30. The IP addresses 169.254.0.1 and 169.254.255.254 are both examples of _____.**Answer :** Automatic Private IP Addressing (APIPA)

ESSAY

31. What is a subnet mask, and how is it used?

Graders Info :

A subnet mask is a 32-bit number that helps one computer find another. The 32 bits are used to indicate what portion of an IP address is the network portion and what part is the host portion. Using this information, a computer can know if a remote computer with a given IP address is on its own or a different network.

32. Describe how an IPv6 address is written and displayed.

Graders Info :

IPv6 addresses are written and displayed as follows:

- An IPv6 address is 128 bits in length and is written as eight blocks (also called quartets) of hexadecimal numbers separated by colons, like this: 2001:0000:0B80:0000:0000:00D3:9C5A:00CC
- Each block is 16 bits. For example, the first block in the preceding IP address is the hexadecimal number 2001, which can be written as 0010 0000 0000 0001 in binary.
- Leading zeroes in a four-character hex block can be eliminated. This means our sampleIP address can be written as 2001:0000:B80:0000:0000:D3:9C5A:CC.
- If blocks contain all zeroes, they can be written as double colons (::). This means oursample IP address can be written two ways:
  ° 2001::B80:0000:0000:D3:9C5A:CC
  ° 2001:0000:B80::D3:9C5A:CC
  To avoid confusion, only one set of double colons is used in an IP address. In this example, the preferred method is the second one 2001:0000:B80::D3:9C5A:CC because the address contains the fewest zeroes.

33. Describe the difference between unicast, multicast, and anycast addresses.

Graders Info :

A unicast address specifies a single node on a network. This differs from a multicast address, which

is delivered to all nodes in a targeted, multicast group. An anycast address can identify multiple destinations, with packets delivered to the closest destination. For example, a DNS name server might send a DNS request to a group of DNS servers that have all been assigned the same anycast address. A router handling the request examines routes to all the DNS servers in the group and routes the request to the closest server.

34. Explain the three different tunneling protocols developed for transmission of IPv6 packets over or through an IPv4 network.

Graders Info :

Three tunneling protocols developed for IPv6 packets to travel over or through an IPv4 network are:

- 6to4 is the most common tunneling protocol. IPv6 addresses intended to be used by this protocol always begin with the same 16-bit prefix (called fixed bits), which is 2002 and the prefix is written as 2002::/16. The next 32 bits of the IPv6 address are the 32 bits of the IPv4 address of the sending host.
- ISATAP (pronounced " eye-sa-tap") stands for Intra-Site Automatic Tunnel Addressing Protocol . This protocol works only on a single organization' s intranet. By default, ISATAP is enabled in Windows 7 and Windows 8.1.
- Teredo (pronounced " ter-EE-do") is named after the Teredo worm, which bores holes in wood. IPv6 addresses intended to be used by this protocol always begin with 2001 and the prefix is written as 2001::/32. Teredo is enabled by default in Windows 7, but not Windows 8.1. On UNIX and Linux systems that don' t have Teredo installed by default, you can install third-party software such as Miredo to provide the Teredo service.

35. Describe the two different types of NAT.

Graders Info :

Two variations of NAT you need to be aware of are:

- SNAT- Using Static Network Address Translation (SNAT) , the gateway assigns the same public IP address to a host each time it makes a request to access the Internet. This method works well when a local host is running a server that is accessed from the Internet. It' s used on home networks that have only a single public IP address provided by an ISP.
- DNAT or Dynamic NAT- Using Dynamic Network Address Translation (DNAT) , the gateway has a pool of public IP addresses that it is free to assign to a local host whenever the local host makes a request to access the Internet. Large organizations that lease many public IP addresses use DNAT.

MULTICHOICE

36. What two types of IP addresses are used on the Internet?

(A) IPv4

(B) IPv6

(C) IPX

(D) IPng

Answer :

37. Traditional MAC addresses are broken into two parts. Name these two parts.

(A) block ID

(B) primary octet

(C) secondary octet

(D) device ID

Answer :

38. What two names are used to describe the configuration in which internal and external DNS queries are handled by different DNS servers or by a single DNS server that is specially configured to keep internal and external DNS zones separate?

(A) walled-DNS

(B) split DNS

(C) split-horizon DNS

(D) DMZ DNS

Answer :

39. What two address prefixes for IPv6 addresses are used for unique local unicast?

(A) FE80::/64

(B) FC00::/7

(C) FD00::/8

(D) FF00::/8

Answer :

40. What two ipconfig commands below are used to show DNS resolver cache information and clear

the name resolver cache?

(A) ipconfig /releasedns

(B) ipconfig /alldns

(C) ipconfig /displaydns

(D) ipconfig /flushdns

Answer :

MATCH

41. *Match each correct item with the statement below.*