Name of the Bundle	Proficient Bundle V1	Subject	Networking V1
Topic	Identifying Nodes in a Networked Communication	Last updated on	08 July 2025

1. **What is a node in a computer network?**

   A. Only the server

   B. A cable used for transmission

   C. Any device connected to the network

   D. A computer without internet

   Answer: C. Any device connected to the network

   Explanation: A node refers to any active device (computer, printer, router, etc.) connected to a network.

2. **Which of the following is not considered a node in a network?**

   A. Switch

   B. Router

   C. Ethernet cable

   D. Computer

   Answer: C. Ethernet cable

   Explanation: Cables are transmission mediums, not devices. Nodes must be addressable devices.

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3. What is used to uniquely identify a node at the network layer?

   A. MAC address

   B. IP address

   C. Device name

   D. Subnet mask

   Answer: B. IP address

   Explanation: An IP address is used to uniquely identify nodes at the network layer for sending/receiving data.

4. What identifier does a node use at the data link layer?

   A. MAC address

   B. Port number

   C. IP address

   D. Protocol

   Answer: A. MAC address

   Explanation: The MAC address is a hardware-level identifier used for local network communication.

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5. Which of these best describes a MAC address?

A. 32-bit software address

B. Unique physical hardware address

C. IP address of a router

D. Username for a node

Answer: B. Unique physical hardware address

Explanation: The MAC address is a unique identifier burned into the network interface card (NIC).

6. What role do routers play in identifying nodes?

A. Assign cable IDs

B. Connect nodes in a ring

C. Forward data using IP addresses

D. Generate MAC addresses

Answer: C. Forward data using IP addresses

Explanation: Routers use the IP addresses of nodes to route data between different networks.

7. What protocol is used to assign IP addresses dynamically to nodes?

   A. DNS

   B. HTTP

   C. DHCP

   D. FTP

   Answer: C. DHCP (Dynamic Host Configuration Protocol)

   Explanation: DHCP automatically assigns IP addresses to nodes when they connect to a network.

8. Which tool can be used in Windows to view the IP address and MAC address of a node?

   A. Notepad

   B. Task Manager

   C. ipconfig (in Command Prompt)

   D. Paint

   Answer: C. ipconfig (in Command Prompt)

   Explanation: The ipconfig command shows network configuration, including the IP and MAC address of a device.

9. **What does MAC stand for in networking?**

   A. Multiple Access Connection

   B. Media Access Control

   C. Machine Access Code

   D. Memory Address Controller

   Answer: B. Media Access Control

   Explanation: MAC stands for Media Access Control, part of the Data Link Layer responsible for addressing devices on a local network.

10. **What is a MAC address primarily used for?**

    A. Sending emails

    B. Identifying a device on the internet

    C. Identifying a device on a local network

    D. Compressing files

    Answer: C. Identifying a device on a local network

    Explanation: A MAC address uniquely identifies a device on a local area network (LAN).

11. Where is the MAC address stored?

   A. In the computer's hard drive

   B. On the cloud

   C. In the NIC (Network Interface Card)

   D. In the operating system

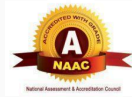   **Answer: C. In the NIC (Network Interface Card)**

   Explanation: The MAC address is embedded in the hardware of the network interface card.

12. What type of address is a MAC address?

   A. Logical address

   B. IP address

   C. Physical address

   D. Port address

   Answer: C. Physical address

   Explanation: A MAC address is a physical (hardware) address, unlike IP which is a logical address.

13. What is the standard length of a MAC address?

   A. 32 bits

   B. 48 bits

   C. 64 bits

   D. 128 bits

   Answer: B. 48 bits

   Explanation: MAC addresses are typically 48-bit (6 bytes) addresses represented in hexadecimal format.

14. Which of the following is a valid format of a MAC address?

   A. 192.168.1.1

   B. A1:B3:C6:DD:E0:FF

   C. 255.255.255.0

   D. 127.0.0.1

   Answer: B. A1:B3:C6:DD:E0:FF

   Explanation: MAC addresses are shown in hexadecimal format, separated by colons or hyphens.

15. Can two devices on the same network have the same MAC address?

A. Yes, it's common

B. Only if they're the same brand

C. No, MAC addresses are unique

D. Yes, but only in wireless networks

Answer: C. No, MAC addresses are unique

Explanation: Each NIC is assigned a globally unique MAC address by the manufacturer.

16. What layer of the OSI model uses MAC addresses?

A. Application Layer

B. Transport Layer

C. Network Layer

D. Data Link Layer

Answer: D. Data Link Layer

Explanation: MAC addressing operates at the Data Link Layer (Layer 2) of the OSI model.

17. What part of a MAC address identifies the manufacturer of the NIC?

A. Host portion

B. OUI (Organizationally Unique Identifier)

C. Subnet ID

D. Protocol number

Answer: B. OUI (Organizationally Unique Identifier)

Explanation: The first 24 bits of a MAC address represent the OUI, which is assigned to each hardware vendor.

18. Which tool can be used to view the MAC address of a device in Windows?

A. Task Manager

B. msconfig

C. ipconfig /all

D. control panel > display

Answer: C. ipconfig /all

Explanation: Running ipconfig /all in Command Prompt displays network settings, including MAC addresses.

19. What does "IP" stand for in "IP address"?

   A. Internal Program

   B. Internet Protocol

   C. Internet Port

   D. Integrated Path

   Answer: B. Internet Protocol

   Explanation: IP stands for Internet Protocol, which is responsible for addressing and routing packets across networks.

20. What is the main purpose of an IP address?

   A. To store data

   B. To connect hardware

   C. To uniquely identify devices on a network

   D. To block websites

   Answer: C. To uniquely identify devices on a network

   Explanation: Each device on a network needs a unique IP address to send and receive data.

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21. How many bits are there in an IPv4 address?

   A. 16 bits

   B. 32 bits

   C. 64 bits

   D. 128 bits

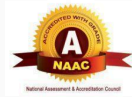   **Answer: B. 32 bits**

   Explanation: IPv4 uses 32-bit addresses, typically written in dotted decimal format (e.g., 192.168.1.1).

22. What is the standard format of an IPv4 address?

   A. Hexadecimal

   B. Binary only

   C. Dotted decimal (e.g., 192.168.0.1)

   D. MAC-based

   Answer: C. Dotted decimal (e.g., 192.168.0.1)

   Explanation: IPv4 addresses are written as four decimal numbers separated by dots.

23. How many total addresses are possible in IPv4?

   A. 256

   B. Approximately 4.3 billion

   C. 65,535
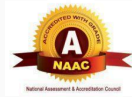
   D. Infinite

   Answer: B. Approximately 4.3 billion

   Explanation: 2^{32} = 4,294,967,296 possible IPv4 addresses.

24. What version of IP uses 128-bit addresses?

   A. IPv2

   B. IPv4

   C. IPv5

   D. IPv6

   Answer: D. IPv6

   Explanation: IPv6 uses 128-bit addresses to provide a vastly larger address space than IPv4.

25. What is the format of an IPv6 address?

A. Dotted decimal

B. Hexadecimal separated by colons

C. Binary code

D. ASCII characters

Answer: B. Hexadecimal separated by colons

Explanation: IPv6 addresses are written in 8 groups of 4 hexadecimal digits, separated by colons (e.g., 2001:0db8:85a3::8a2e:0370:7334).

26. Which of the following is a valid IPv4 address?

A. 999.999.999.999

B. 172.16.254.1

C. 256.0.0.1

D. 192.168@1@1

Answer: B. 172.16.254.1

Explanation: IPv4 addresses consist of four numbers from 0 to 255, separated by dots.

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27. What protocol is used to assign IP addresses dynamically?

A. DNS

B. FTP

C. DHCP

D. HTTP

Answer: C. DHCP (Dynamic Host Configuration Protocol)

Explanation: DHCP automatically assigns IP addresses to devices in a

network.

28. What is a public IP address?

A. An IP used only in private LANs

B. An address assigned by the operating system

C. An IP address accessible over the internet

D. An outdated address format

Answer: C. An IP address accessible over the internet

Explanation: Public IP addresses are routable over the internet and assigned

by ISPs.

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29. What is a private IP address?

   A. An address used for broadcasting

   B. An IP address only valid within a local network

   C. An address used only in IPv6

   D. An unassigned address

   Answer: B. An IP address only valid within a local network

   Explanation: Private IPs (e.g., 192.168.x.x, 10.x.x.x) are used inside LANs and not directly accessible over the internet.

30. Which tool in Windows helps view your IP address?

   A. Disk Manager

   B. Task Scheduler

   C. Command Prompt (ipconfig)

   D. Paint

   Answer: C. Command Prompt (ipconfig)

   Explanation: Running ipconfig shows the IP address of the device's active network interfaces.

31. Which protocol resolves domain names to IP addresses?

A. ARP

B. DHCP

C. FTP

D. DNS

Answer: D. DNS (Domain Name System)

Explanation: DNS maps domain names (like google.com) to IP addresses.

32. How many bits are there in an IPv6 address?

A. 32 bits

B. 64 bits

C. 128 bits

D. 256 bits

Answer: C. 128 bits

Explanation: IPv6 addresses are 128 bits long, allowing a vast number of unique IP addresses.

33. Which of the following is a valid IPv6 address?

   A. 192.168.1.1

   B. 255.255.255.0

   C. 2001:0db8:85a3:0000:0000:8a2e:0370:7334

   D. 127.0.0.1

   **Answer: C. 2001:0db8:85a3:0000:0000:8a2e:0370:7334**

   Explanation: That is a valid IPv6 format with eight blocks of hexadecimal values.

34. What is the main reason for introducing IPv6?

   A. To make networks wireless

   B. To reduce internet cost

   C. To expand the number of available IP addresses

   D. To support web hosting

   Answer: C. To expand the number of available IP addresses

   Explanation: IPv4 was running out of addresses; IPv6 provides a much larger address space.
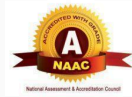
35. What does an IPv6 address use to separate its segments?

A. Dots (.)

B. Hyphens (-)

C. Colons (:)

D. Slashes (/)

Answer: C. Colons (:)

Explanation: IPv6 addresses use colons to separate hexadecimal blocks.

36. What is the total number of possible IPv6 addresses?

A. 2^{32}

B. 2^{64}

C. 2^{128}

D. 128 million

Answer: C. 2^{128}

Explanation: IPv6 supports 2^{128} unique addresses, approximately 340

undecillion.