Computer Network Technology

(300)

NATIONAL 2025

CONCEPT KNOWLEDGE:

Multiple Choice (50 @ 2 points each) _____ (100 points)

Test Time: 60 minutes

Multiple Choice Questions

Directions: Identify the letter of the choice that best completes the statement or answers the question.

1. During network troubleshooting, a user reports being unable to access a specific website. Which administrative utility can be used to diagnose DNS-related issues?
    A. Ping
    B. Tracert
    C. Ipconfig
    D. Nslookup

2. An organization is implementing a new network infrastructure and needs to assign unique IP addresses to all devices. Which protocol is used to dynamically assign IP addresses on a network?
    A. IPv4
    B. IPv6
    C. DHCP
    D. DNS

3. Which of the following cloud service models provides the most control over the operating system and hardware?
    A. SaaS
    B. PaaS
    C. IaaS
    D. FaaS

4. During network troubleshooting, a user reports slow network performance between two departments that use the same subnet. Which device should be checked to ensure proper connectivity between the departments?
    A. Router
    B. Switch
    C. Proxy
    D. Firewall

5. An organization is planning to deploy a new firewall to secure its network. Which device is used to control traffic between different network segments based on security rules?
    A. Hub
    B. Switch
    C. Firewall
    D. Proxy

6. What does the "TTL" field in a DNS record specify?
   A. The total time a domain name is registered
   B. The time during which the DNS server is operational
   C. The duration for which a DNS record is cached by a client or server
   D. The amount of time it takes to resolve a domain name

7. Which layer of the OSI model is responsible for end-to-end communication and reliability?
   A. Physical Layer
   B. Data Link Layer
   C. Transport Layer
   D. Network Layer

8. Which of the following is a directory service standard designed for Unix-based systems, providing authentication and configuration data?
   A. NIS
   B. DHCP
   C. SMB
   D. POP3

9. In the context of LDAP, what does the term "schema" refer to?
   A. The physical layout of network devices
   B. The structure and organization of directory entries and attributes
   C. The encryption method used for directory data
   D. The default user password policy

10. An organization is implementing a new network infrastructure and needs to be sure hosts can be accessed using their domain name. Which protocol is used to convert domain names to IP addresses on the internet?
    A. IPv4
    B. IPv6
    C. DHCP
    D. DNS

11. A network engineer is setting up a new network and needs to connect multiple devices across different networks. Which networking device should be used to route traffic between different network segments?
    A. Router
    B. Switch
    C. Firewall
    D. Proxy

12. During network troubleshooting, a user reports being unable to access a specific website. Which administrative utility can be used to check the route that data packets take to reach the destination website?
    A. Ping
    B. Tracert
    C. Ipconfig
    D. Nslookup

13. An organization is planning to deploy a new device to secure its network. Which device is used to filter incoming and outgoing network traffic based on rules?
    A. Server
    B. Switch
    C. Firewall
    D. Hub

14. Users on a specific subnet are experiencing slow network performance when accessing resources on another subnet. Network devices like routers and switches are working properly. Which OSI layer might be causing the issue?
    A. Data Link Layer
    B. Network Layer
    C. Transport Layer
    D. Physical Layer

15. A network administrator is investigating slow network performance between two departments on different subnets. Which device should be checked to ensure proper connectivity between the departments?
    A. Router
    B. Switch
    C. Proxy
    D. Firewall

16. A development team needs an environment to test their application without affecting the production system. They require multiple isolated environments that can be quickly created and destroyed. What virtualization technology would best meet these needs?
    A. VPN
    B. VMs
    C. Containers
    D. Bare-metal Servers

17. A business wants to ensure that their virtual machines are highly available and can be quickly restored in case of failure. Which feature of virtualization technology should they implement to achieve this?
    - A. Containers
    - B. Load Balancing
    - C. Clustering
    - D. Encryption

18. A company uses a network operating system that allows for the deployment of policies across multiple client machines to manage security settings and software installations. Which feature of the network operating system is this?
    - A. Group Policy Management
    - B. Virtual Private Network
    - C. Network Address Translation
    - D. Dynamic Host Configuration Protocol

19. A network engineer is configuring a new router to connect multiple networks. Which routing protocol allows routers to dynamically learn and share network information with other routers?
    - A. DHCP
    - B. DNS
    - C. EIGRP
    - D. FTP

20. A user is unable to access a website by its domain name but can access it by entering its IP address directly. What is the most likely DNS-related issue?
    - A. Incorrect IP address configuration on the user's device
    - B. DNS server is down or unresponsive
    - C. The website is blocking the user's IP address
    - D. The user's web browser is outdated

21. A company's website has recently been moved to a new hosting provider, but some users are still being directed to the old site. What is the most likely cause of this issue?
    - A. The hosts' HOST file has not updated
    - B. The web server is experiencing high traffic
    - C. The new hosting provider is experiencing downtime
    - D. The old hosting provider has blocked the website

22. A network administrator needs to configure a DNS server to respond with the same IP address regardless of the queried domain name. Which DNS record type should be used for this purpose?
    - A. MX Record
    - B. CNAME Record
    - C. A Record
    - D. PTR Record

23. An organization is implementing DNSSEC to improve the security of its DNS infrastructure. What is the primary benefit of using DNSSEC?
    A. Encrypting DNS queries and responses
    B. Authenticating the origin of DNS data and ensuring data integrity
    C. Speeding up DNS resolution times
    D. Providing load balancing for DNS servers

24. A remote employee needs to securely connect to the company's network from home. Which protocol provides a secure encrypted connection for remote access?
    A. FTP
    B. Telnet
    C. NIS
    D. VPN

25. An administrator needs to ensure that a specific printer always receives the same IP address from the DHCP server. What configuration should be applied?
    A. Dynamic Allocation
    B. Static IP Configuration
    C. DHCP Exclusion
    D. DHCP Reservation

26. A user is unable to access network resources and finds their IP address is in the APIPA range. What is the most likely cause?
    A. The WINS server is down
    B. The DNS server is misconfigured
    C. The DHCP server is unavailable
    D. The user's network cable is unplugged

27. A user at home is experiencing slow wireless internet speeds. Which technology can be used to increase wireless coverage and improve connectivity in a home network?
    A. Bluetooth
    B. NFC
    C. Wi-Fi Extender
    D. Ethernet

28. A company is transitioning its infrastructure to a cloud-based model to improve scalability and flexibility. What technology allows resources to be provisioned and managed over the internet?
    A. Virtualization
    B. Cloud Computing
    C. WINS
    D. DHCP

29. A network administrator wants to reduce the load on a single DHCP server and improve reliability by having another DHCP server provide addresses to the same subnet. What feature should be used?
    A. DHCP Relay
    B. DHCP Failover
    C. DHCP Scope
    D. DHCP Superscope

30. A remote worker needs to access the company's internal network securely. Which protocol should be used for secure remote access over the internet?
    A. Telnet
    B. NTP
    C. VPN
    D. FTP

31. A company has implemented a network operating system to manage resources like printers and file shares. Users need to verify their identity with the network before accessing these resources. What is this process called?
    A. Authorization
    B. Authentication
    C. Encryption
    D. Replication

32. A user reports that they cannot access shared files on the network. Upon investigation, you find that the user's computer is not part of the domain. What is the most likely solution?
    A. Reinstall the network operating system
    B. Reset the user's password
    C. Join the computer to the domain
    D. Reconfigure the user's firewall settings

33. After a recent network upgrade, users are experiencing slower login times. The network administrator suspects the issue might be related to profile loading. What type of user profile could potentially improve login times?
    A. Local Profile
    B. Roaming Profile
    C. Mandatory Profile
    D. Cached Profile

34. A network administrator needs to configure a new server with an IP address. The network uses both IPv4 and IPv6. The administrator wants the server to have a globally unique address without the need for Network Address Translation (NAT). Which type of IP address should be assigned?
    A. IPv4 Private Address
    B. IPv4 APIPA address
    C. IPv6 Link-Local Address
    D. IPv6 Global Unicast Address

35. An organization is planning to implement IPv6 but wants to continue using their existing IPv4 infrastructure during the transition. Which IPv6 feature allows for this compatibility?
    A. Dual Stack
    B. NAT64
    C. 6to4 Tunneling
    D. Teredo

36. A network engineer is configuring an IPv4 address for a device and wants to ensure that it is within the range of a Class C network. Which of the following IP addresses is a valid Class C address?
    A. 10.10.10.1
    B. 172.16.0.1
    C. 192.168.1.1
    D. 224.0.0.1

37. A company is deploying a new application that requires both IPv4 and IPv6 connectivity. Which DNS record types should be used to ensure the application can be accessed via both IP versions?
    A. A and CNAME
    B. A and PTR
    C. AAAA and CNAME
    D. A and AAAA

38. An organization wants to implement a secure email system that ensures emails are encrypted in transit. Which protocol should be used?
    A. SMTP
    B. POP3-Secure
    C. IMAP
    D. SMTP with TLS/SSL

39. A network administrator needs to monitor network traffic and collect data for analysis. Which protocol can be used to gather information about network devices and their status?
    A. SNMP
    B. DNS
    C. DHCP
    D. HTTP

40. A company needs to implement a protocol that will allow for the transfer of files between systems, but it must support anonymous authentication. Which protocol should they use?
    A. SFTP
    B. FTPS
    C. FTP
    D. SCP

41. A team is developing a web application that requires real-time communication between clients and the server, such as live chat or online gaming. Which protocol is most suitable for this requirement?
    A. HTTP
    B. WebSocket
    C. SMTP
    D. FTP

42. A user reports that their computer cannot connect to the network. The network cable is plugged in, but the network adapter shows "disconnected" status. What is the first thing the network administrator should check?
    A. The switch port configuration
    B. The firewall settings on the computer
    C. The proxy server settings
    D. The physical condition of the network cable

43. A network technician is troubleshooting an issue where devices on a specific VLAN cannot communicate with devices on the same VLAN but connected to a different switch. What network device feature is likely required to enable this communication?
    A. NAT
    B. VLAN Trunking
    C. Port Mirroring
    D. DHCP Relay

44. A business needs to protect its internal network from unauthorized access while allowing employees to access the internet. Which device is best suited for this task?
    A. Switch
    B. NAT server
    C. Firewall
    D. Modem

45. A company wants to deploy a new web application that can scale automatically based on user demand. Which cloud computing model is most suitable for this purpose?
    A. Infrastructure as a Service (IaaS)
    B. Platform as a Service (PaaS)
    C. Software as a Service (SaaS)
    D. Data as a Service (DaaS)

46. An organization wants to reduce its hardware footprint by running multiple isolated environments on a single physical server. Which virtualization technology should they use?
    A. Nano Server
    B. Hyper-V
    C. Bare-metal Servers
    D. Virtual Private Network

47. A business is concerned about data security and compliance and prefers to maintain control over its data and infrastructure. Which cloud deployment model should they choose?
    A. Public Cloud
    B. Private Cloud
    C. Hybrid Cloud
    D. Community Cloud

48. A company using a cloud service wants to ensure that their applications remain available even if one of the data centers goes down. Which cloud service feature provides this capability?
    A. Load Balancing
    B. Auto-scaling
    C. Multi-region Deployment
    D. Pay-as-you-go Pricing

49. A user reports that they cannot access the internet, but other users on the same network can. The network administrator wants to verify the user's computer's IP address configuration. Which command should they use?
    A. Ping
    B. Nslookup
    C. Ipconfig
    D. tracert

50. An IT team is troubleshooting a network issue where users are experiencing intermittent connectivity problems. They suspect an issue with a network cable or port. Which tool can be used to test the physical layer of the network?
    A. Protocol Analyzer
    B. Cable Tester
    C. Ping Command
    D. Tracert Command