

Contestant Number: _____

Time: _____

Rank: _____



Computer Network Technology (300)

STATE 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. What does OSI stand for in networking?
 - A. Open Systems Integration
 - B. Operations Systems Interconnection
 - C. Open Systems Interconnection
 - D. Operations Systems Integration
2. Which of the following is a valid IPv4 address?
 - A. AB:CD::EF:01:23::45
 - B. 2001:0db8:85a3:0000:0000:8a2h:0370:7334
 - C. 192.168.1.1
 - D. 5000::1
3. Which network device forwards data based on MAC addresses?
 - A. Router
 - B. Switch
 - C. Firewall
 - D. Proxy
4. What is the main purpose of a firewall in a network?
 - A. To prevent physical access to the network
 - B. To control incoming and outgoing network traffic
 - C. To boost network speed
 - D. To enhance WiFi connectivity
5. Which of the following is a remote access protocol?
 - A. POP3
 - B. SMTP
 - C. ICMP
 - D. PPTP
6. Which wireless technology allows devices to connect to each other in a Personal Area Network (PAN)?
 - A. LTE
 - B. WiMAX
 - C. Bluetooth
 - D. WLAN

7. Which of the following is a cloud service model?
 - A. Internet Protocol Suite
 - B. Platform as a Service
 - C. File Transfer Protocol
 - D. Ethernet Protocol
8. Which of the following best describes Infrastructure as a Service (IaaS) in cloud computing?
 - A. A service model that delivers software applications over the internet
 - B. A platform that provides tools for application development and deployment
 - C. A service model that provides virtualized computing resources over the internet
 - D. Control Panel
9. What is one of the purposes of a proxy server in a network?
 - A. To secure a wireless connection
 - B. To translate data between networks
 - C. To limit access to specific resources
 - D. A data storage solution accessible via the internet
10. In TCP/IP subnetting, how many bits are used for the host portion in a Class B address?
 - A. 8 bits
 - B. 16 bits
 - C. 24 bits
 - D. 32 bits
11. What is the main function of a firewall in a network?
 - A. Assign IP addresses
 - B. Block unauthorized access
 - C. Translate domain names
 - D. Provide email services
12. What is the primary purpose of a network switch?
 - A. Reduce hardware investment
 - B. Provide Scalability and elasticity
 - C. Forward traffic based on MAC addresses
 - D. Increase complexity of infrastructure management
13. Which frequency bands are commonly used by home Wi-Fi networks?
 - A. 1.2 GHz and 2.4 GHz
 - B. 5 GHz and 10 GHz
 - C. 2.4 GHz and 5 GHz
 - D. 3 GHz and 4 GHz

14. What does the term "WPA2" refer to in the context of wireless networking?
- A. A type of antenna used in routers
 - B. A security protocol for Wi-Fi networks
 - C. A wireless networking protocol
 - D. A network topology
15. What does DNS stand for in the context of internet technologies?
- A. Domain Network System
 - B. Domain Name Service
 - C. Domain Name System
 - D. Domain Networking Service
16. What is the purpose of a DNS MX record?
- A. To define the mail servers responsible for receiving email for the domain
 - B. To map a domain name to another domain name
 - C. To specify the IP address of the domain
 - D. To provide verification information for email security
17. Which DNS record type is used to point a domain to an IPv6 address?
- A. A record
 - B. AAAA record
 - C. NS record
 - D. SRV record
18. What is the purpose of a network router in a computer network?
- A. Connects devices within a LAN
 - B. Filters network traffic
 - C. Determines the best path for data packets
 - D. Translates domain names to IP addresses
19. How does a network firewall protect against unauthorized access?
- A. Encrypts data transmissions
 - B. Blocks malicious websites
 - C. Monitors and filters incoming traffic
 - D. Assigns IP addresses dynamically
20. What is the primary purpose of the RDP?
- A. To securely transfer files between two devices
 - B. To encrypt emails
 - C. To provide a GUI for remote access to another computer
 - D. To establish a VPN connection

21. What is the primary function of a network router in a WAN environment?
- A. Filters network traffic
 - B. Connects devices within a LAN
 - C. Determines the best path for data packets
 - D. Translates domain names to IP addresses
22. Which protocol is used for remote access and management of network devices, but is not secure due to transmitting data in plain text?
- A. SNMP
 - B. SSH
 - C. Telnet
 - D. SCP
23. Which Linux-based network operating system is known for its strong security features and is commonly used in servers?
- A. Red Hat Enterprise Linux
 - B. Windows 10
 - C. Solaris
 - D. Chrome OS
24. In the CIDR notation 192.168.1.0/24, what does the "/24" represent?
- A. The total number of available IP addresses
 - B. The number of host bits
 - C. The subnet mask 255.255.255.0
 - D. The total number of network addresses
25. Which of the following is a link-state routing protocol?
- A. RIP (Routing Information Protocol)
 - B. OSPF (Open Shortest Path First)
 - C. EIGRP (Enhanced Interior Gateway Routing Protocol)
 - D. BGP (Border Gateway Protocol)
26. In a Class A IPv4 network, what is the default subnet mask?
- A. 255.0.0.0
 - B. 255.255.0.0
 - C. 255.255.255.0
 - D. 255.255.255.255
27. Which remote access protocol is commonly used for secure connections to a network over the internet?
- A. VPN
 - B. FTP
 - C. Telnet
 - D. SSH

28. What is the purpose of a directory service in a network?
- A. Centralized management of network resources
 - B. Secure network traffic
 - C. Monitor network performance
 - D. Troubleshoot network issues
29. What layer of the OSI model is responsible for data transmission between nodes on a network?
- A. Data Link
 - B. Network
 - C. Transport
 - D. Application
30. In a network environment, what is the primary role of a network operating system (NOS)?
- A. Manage hardware components
 - B. Serve web pages
 - C. Manage network resources
 - D. Analyze network traffic
31. As a network engineer, you need to deploy a new application quickly. Which cloud computing characteristic allows for rapid provisioning of resources?
- A. Scalability
 - B. Elasticity
 - C. Virtualization
 - D. On-premises hosting
32. An employee working remotely needs to securely access files on the company server. Which protocol should be used for encrypted communication over the network?
- A. FTP
 - B. Telnet
 - C. SSH
 - D. HTTP
33. You need to divide a network into smaller subnetworks to improve efficiency. What is the process of dividing a network into smaller segments called?
- A. Subnetting
 - B. Routing
 - C. Bridging
 - D. Switching

34. A network engineer is setting up a new network and needs to connect multiple devices within a building. Which networking device should be used to interconnect devices within the same network segment?
- A. Router
 - B. Switch
 - C. Firewall
 - D. Proxy
35. A network engineer needs to configure a subnet mask for a network. What does the subnet mask determine in relation to IP addresses?
- A. Network address
 - B. Host address
 - C. Broadcast address
 - D. DNS address
36. In a large organization, each department has its own network segment. Which device can be used to connect these different network segments and regulate traffic between them?
- A. Router
 - B. Switch
 - C. Firewall
 - D. Proxy
37. When troubleshooting network connectivity issues, a network engineer discovers that a network adapter is not functioning correctly. Which layer of the OSI model is responsible for ensuring that data is transmitted and received correctly by the network adapter?
- A. Data Link Layer
 - B. Network Layer
 - C. Transport Layer
 - D. Application Layer
38. 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. OSPF
 - D. FTP
39. An organization is upgrading its network infrastructure to support the latest IP addressing scheme. Which version of IP provides a larger address space and improved security for a TCP/IP network compared to IPv4?
- A. IPX
 - B. IPv6
 - C. DHCP
 - D. DNS

40. During network troubleshooting, a user reports that they cannot access internal resources from outside the organization's network. Which technology can provide secure access to internal resources for remote users?
- A. Hub
 - B. Switch
 - C. Proxy
 - D. VPN
41. An organization is migrating its on-premises servers to a cloud environment. Which technology allows for the creation and management of virtual servers in the cloud?
- A. Virtual LAN
 - B. VPN
 - C. Virtualization
 - D. WINS
42. During network troubleshooting, a user is unable to obtain an IP address automatically. Which service dynamically assigns IP addresses to devices on a network?
- A. DNS
 - B. WINS
 - C. DHCP
 - D. FTP
43. Which type of cabling is most commonly used in Ethernet networks?
- A. Coaxial Cable
 - B. Twisted Pair Cable
 - C. Fiber Optic Cable
 - D. Serial Cable
44. A network administrator is installing a new network operating system on client devices. Which operating system is commonly found in enterprise environments for network management?
- A. Windows 11
 - B. MacOS
 - C. Linux Workstation
 - D. Windows Server
45. A user reports that they cannot access a specific website, but other websites are accessible. What is the first OSI layer you should check to begin troubleshooting?
- A. Physical Layer
 - B. Network Layer
 - C. Transport Layer
 - D. Application Layer

46. An organization is implementing a directory service to centralize user authentication and access control. Which service provides a centralized database of user accounts and permissions?
- A. DNS
 - B. DHCP
 - C. LDAP
 - D. WINS
47. A network technician is troubleshooting intermittent connectivity issues. They suspect a problem with the network cable connecting the workstation to the switch. Which OSI layer should be the focus of their troubleshooting?
- A. Physical Layer
 - B. Data Link Layer
 - C. Network Layer
 - D. Presentation Layer
48. A company wants to move its applications to a cloud environment to reduce hardware costs and improve scalability. Which type of cloud service would best support this need?
- A. IaaS
 - B. PaaS
 - C. SaaS
 - D. DaaS
49. A company is experiencing high costs related to their on-premises infrastructure, including power, cooling, and maintenance. They are considering a cloud solution but want to avoid long-term commitments. What type of cloud service contract would be most suitable?
- A. Reserved Instance
 - B. Pay-as-you-go
 - C. Spot Instance
 - D. Dedicated Hosting
50. A user reports that they cannot access shared folders on a network drive. You have verified that their computer is connected to the network and that the network cable is working. What should you check next?
- A. The computer's firewall settings
 - B. The operating system's update history
 - C. The local disk space on the user's computer
 - D. The user's email configuration