

Member ID: \_\_\_\_\_

Time: \_\_\_\_\_

Rank: \_\_\_\_\_



# COMPUTER NETWORK TECHNOLOGY

(300)

**REGIONAL 2023**

**Multiple Choice:**

50 @ 2 points each

\_\_\_\_\_ (100 points)

**Test Time: 60 minutes**

**GENERAL GUIDELINES:**

*Failure to adhere to any of the following rules will result in disqualification:*

1. Member must hand in this test booklet and all printouts if any. Failure to do so will result in disqualification.
2. No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests (handwritten, photocopied, or keyed) are allowed in the testing area.
3. Electronic devices will be monitored according to ACT standards.

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

1. Which of the following answers would best describe an operating system?
  - A. The software that manages computer hardware, software resources, and provides common services for computer programs.
  - B. The primary component of a computer that processes instructions.
  - C. The component that connects a computer to a computer network.
  - D. The software that handles the storage, retrieval, and updating of data.
2. Which of the following DHCP options tells the client which router is the default router?
  - A. DHCP option 1: Subnet Mask
  - B. DHCP option 3: Gateway
  - C. DHCP option 6: Domain Name Server
  - D. DHCP option 12: Hostname
3. Which of the following DHCP options carries the IP address(es) of the DNS servers that the client uses for name resolution?
  - A. DHCP option 1: Subnet Mask
  - B. DHCP option 6: Domain Name Server
  - C. DHCP option 12: Hostname
  - D. DHCP option 15: Domain Name
4. How many fields does an IPv4 header contain?
  - A. 11
  - B. 15
  - C. 9
  - D. 13
5. Which of the following answers best describes buffering?
  - A. Preloading data into a reserved area of memory.
  - B. A P2P system of two or more devices that can communicate with one another in both directions.
  - C. The transfer of data from memory to storage.
  - D. The transfer of resource intensive computational tasks to a separate processor.
6. By default, at what interval are Bridge Protocol Data Units (Spanning Tree Protocol) sent?
  - A. Every 60 seconds
  - B. Every 30 seconds
  - C. Every 15 seconds
  - D. Every 2 seconds

7. Which of the following is a layer of the TCP/IP model?
  - A. Presentation Layer
  - B. Data link Layer
  - C. Internet Layer
  - D. Session Layer
8. Which of the following is a false statement regarding a Workgroup?
  - A. The computers in the workgroup mainly have their own local database.
  - B. Computers must be connected to the same local network.
  - C. The computers may be connected to several local networks.
  - D. A workgroup works best with fewer computers.
9. Which of the following is a false statement regarding a domain?
  - A. Due to the lack of centralized access management a domain is less secure.
  - B. You can log into any computer on the domain if you have a user account on the domain.
  - C. The computers in a domain have a centralized database.
  - D. A domain works best for large business networks.
10. Which portion of this MAC Address represents the Vender assigned portion (NIC): 70-85-C2-AB-86-42
  - A. 70-85-C2
  - B. 70-85-C2-AB
  - C. C2-AB-86-42
  - D. AB-86-42
11. The Transmission Control Protocol is connection oriented.
  - A. True
  - B. False
12. The User Datagram Protocol uses a connectionless protocol.
  - A. True
  - B. False
13. Which of the following is used as a network medium?
  - A. Wire
  - B. Fiber
  - C. Air
  - D. All of the other answers are correct.
14. A VLAN partitions and isolates a network at which OSI layer?
  - A. Physical Layer
  - B. Data Link Layer
  - C. Network Layer
  - D. Transport Layer

15. Per IEEE 802.1Q, what is the usable limit of VLANs that can be created within a network?
- A. 4,098
  - B. 4,096
  - C. 4,094
  - D. 4,092
16. Which of the following is not a method of combining multiple network connections to increase bandwidth and provide redundancy?
- A. Link Aggregation
  - B. NIC teaming
  - C. Port Channeling
  - D. NIC partitioning
17. Which of the following provides an encrypted connection over the Internet, for the purpose of connecting a device in one network to another network?
- A. VLAN
  - B. NAT
  - C. BGP
  - D. VPN
18. Which of the following protocols provides secure remote command-line, login, etc?
- A. FTP
  - B. Telnet
  - C. SMB
  - D. SSH
19. Which of the following IP address ranges is reserved for loopback?
- A. 192.168.0.0 - 192.168.255.255
  - B. 10.0.0.0 - 10.255.255.255
  - C. 127.0.0.0 - 127.255.255.255
  - D. 172.16.0.0 - 172.16.255.255
20. Which of the following is a valid path to access a shared folder named “QuickBooks” on a server named “AppServer”?
- A. \\QuickBooks\\AppServer
  - B. //AppServer/QuickBooks
  - C. //QuickBooks/AppServer
  - D. None of the other answers are correct
21. Which of the following Wi-Fi frequencies is best for penetrating solid objects, such as office walls?
- A. 2.4 GHz
  - B. 5 GHz
  - C. 6 GHz
  - D. 60 GHz

22. Which of the following Wi-Fi frequencies would provide the better coverage at longer distances?
- A. 900 MHz
  - B. 2.4 GHz
  - C. 3.65 GHz
  - D. 5 GHz
23. Which of the following wireless encryption standards is most secure?
- A. WPA
  - B. WPA2
  - C. WPA3
  - D. WEP
24. Which of the following wireless encryption standards is least secure?
- A. WPA
  - B. WPA2
  - C. WPA3
  - D. WEP
25. A router that has the capability to transmit and receive data using both 2.4 GHz and 5 GHz frequency is known as?
- A. A quad-band router
  - B. A multi-band router
  - C. A dual-band router
  - D. A single-band router
26. Which of the following wireless encryption standards would use CCMP/AES for encryption?
- A. WPA
  - B. WPA2
  - C. WPA3
  - D. WEP
27. Which of the following protocols uses TCP and port(s) 20/21?
- A. FTP
  - B. DNS
  - C. SSH
  - D. DHCP
28. Which of the following protocols uses TCP and port 22?
- A. FTP
  - B. DNS
  - C. SSH
  - D. DHCP

29. Which of the following protocols uses UDP and port 53?
- A. FTP
  - B. DNS
  - C. SSH
  - D. DHCP
30. Which of the following protocols uses UDP and port(s) 67/68?
- A. FTP
  - B. DNS
  - C. SSH
  - D. DHCP
31. Which of the following port ranges would RDP fall under?
- A. Port 0 to 1023
  - B. Port 1024 to 49151
  - C. Port 49152 to 65535
  - D. None of the other answers are correct
32. Which of the following port ranges would a dynamic or ephemeral port fall under?
- A. Port 0 to 1023
  - B. Port 1024 to 49151
  - C. Port 49152 to 65535
  - D. None of the other answers are correct
33. Which of the following port ranges would HTTP fall under?
- A. Port 0 to 1023
  - B. Port 1024 to 49151
  - C. Port 49152 to 65535
  - D. None of the other answers are correct
34. Which of the following was added by the IEEE WLAN standard, 802.11n?
- A. Wireless Fidelity (Wi-Fi)
  - B. Multiple-input multiple-output antennas (MIMO)
  - C. Power over Ethernet (PoE)
  - D. Wake on LAN (WoL)
35. Which of the following labels was given to 802.11ac by the Wi-Fi Alliance?
- A. Wi-Fi 5
  - B. Ultimate Wi-Fi
  - C. Wi-Fi 6
  - D. Super Wi-Fi

36. Which of the following labels was given to 802.11ax by the Wi-Fi Alliance?
- A. Wi-Fi 5
  - B. Ultimate Wi-Fi
  - C. Wi-Fi 6
  - D. Super Wi-Fi
37. How many hosts per network does a Class C network offer?
- A. 16,777,214
  - B. 65,534
  - C. 254
  - D. None of the other answers are correct
38. What is the Class D network reserved for?
- A. Loopback
  - B. Unicasting
  - C. Broadcasting
  - D. Multicasting
39. Which of the following is the default Subnet Mask for a Class B network?
- A. 255.0.0.0
  - B. 255.255.0.0
  - C. 255.255.255.0
  - D. 255.255.255.255
40. How many networks does a Class A network offer?
- A. 2,097,150
  - B. 16,382
  - C. 126
  - D. None of the other answers are correct
41. You are tasked with subnetting a Class C network, so that only 2 usable hosts are available per subnet. Which of the following subnet masks would you use?
- A. 255.255.255.252
  - B. 255.255.255.248
  - C. 255.255.255.240
  - D. 255.255.255.224
42. Which of the following devices does not operate at the Physical layer?
- A. Cable
  - B. Hub
  - C. Router
  - D. Ethernet port



43. Which of the following devices does not operate at the Data Link layer?
- A. Switch
  - B. Bridge
  - C. Wireless Access Point
  - D. Repeater
44. Which of the following types of switch port would be needed to allow multiple VLANs?
- A. Access
  - B. Trunk
  - C. Port Channel
  - D. Uplink Port
45. Which of the following types of switch port would only allow the specified VLAN?
- A. Access
  - B. Trunk
  - C. Port Channel
  - D. Uplink Port
46. When troubleshooting a client DNS resolution issue, which of the following Windows commands would be the most helpful to begin with?
- A. netstat -ano
  - B. ipconfig /all
  - C. tracert
  - D. netsh
47. The senior network administrator states that the Remote Desktop server is listening on a non-standard port. Which of the following commands would you use to find which port the server is listening on?
- A. netstat -ano
  - B. ipconfig /all
  - C. tracert
  - D. netsh
48. The senior network administrator has asked that you forward external requests for port 443 to the internal Web server. Which of the following would potentially need to be configured on the router to allow this?
- A. Firewall
  - B. Network Address Translation
  - C. Port Forwarding
  - D. All of the other answers are correct.

49. You are testing network connectivity between a client and server. Ping is failing with the following error:

Pinging DC01.BPA.org [10.10.1.100] with 32 bytes of data:

Request timed out.

Request timed out.

Request timed out.

Request timed out.

Ping statistics for 10.10.1.100:

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

Assuming that 10.10.1.100 is the correct IP address, which of the following network protocols is the most likely culprit?

- A. ARP
  - B. DHCP
  - C. DNS
  - D. ICMP
50. You are troubleshooting a network connectivity issue on a File Server. The File Server can ping clients and other servers, but it cannot ping external websites. Which of the following network settings would most likely not be necessary to connect to the external website?
- A. IP address
  - B. Subnet mask
  - C. Default gateway
  - D. VLAN ID