**Contestant Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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

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



**COMPUTER NETWORK TECHNOLOGY**

(300)

**REGIONAL 2022**

**CONCEPT KNOWLEDGE:**

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

**TOTAL POINTS (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.
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.

**MULTIPLE CHOICE**

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

1. Which of the following terms would describe software that is used to manage computer hardware, software, resources, and allows user interaction through a command-line interface or graphical user interface?
   1. Operating System
   2. Central Processing Unit
   3. Network Interface Controller
   4. Database Management System
2. Which of the following DHCP options, if misconfigured, could prevent a client from accessing the BPA.org website?
   1. DHCP option 2: Time Zone Offset
   2. DHCP option 4: Time Server
   3. DHCP option 6: Domain Name Server
   4. DHCP option 51: Lease Time
3. A client (IP address: 192.168.1.150) is attempting to access a webserver (IP address: 143.166.147.101), which of the following DHCP options will provide the client with the necessary information to reach the webserver?
   1. DHCP option 1: Subnet Mask
   2. DHCP option 3: Gateway
   3. DHCP option 12: Hostname
   4. DHCP option 15: Domain Name
4. Which of the following is *not* contained within an IPv4 header?
   1. Data
   2. TTL
   3. Protocol
   4. Checksum
5. Which of the following network technologies was designed primarily to help mitigate CPU utilization?
   1. Onloading
   2. Duplexing
   3. Buffering
   4. Offloading
6. At what interval are Bridge Protocol Data Units (Spanning Tree Protocol) sent, by default?
   1. Daily
   2. Hourly
   3. Every 15 minutes
   4. Every 2 seconds
7. Which of the following is *not* a layer of the TCP/IP model?
   1. Application
   2. Communication
   3. Internet
   4. Network Interface
8. Which of the following is a *true* statement with regards to a Workgroup?
   1. Computers, printers, user accounts, etc. are within a central database
   2. Users can use the same account to login to any computer
   3. Each computer maintains their own database
   4. Computers can be on different local networks
9. Which of the following is a *true* statement with regards to a Domain?
   1. Policies can be used to push configuration to computers / users
   2. Computers must be on the same local network
   3. Configuration is changed manually for each computer / user
   4. Computers have their own set of user accounts
10. Looking at the following MAC address, which portion represent the vendor assigned portion: 70-85-C2-AB-86-42
    1. 70-85-C2
    2. 70-85-C2-AB
    3. C2-AB-86-42
    4. AB-86-42
11. The Transmission Control Protocol is a connectionless protocol.
    1. True
    2. False
12. The User Datagram Protocol is a connectionless protocol.
    1. True
    2. False
13. Which of the following is *not*used as a network medium?
    1. Wire
    2. Fiber
    3. Air
    4. Land
14. Which of the following is primarily considered to be a network edge device?
    1. Hub
    2. Switch
    3. Router
    4. Server
15. Which of the following is *not* considered a benefit of Remote Direct Memory Access (RDMA)?
    1. Increased latency
    2. Increased throughput
    3. Low latency
    4. Low CPU utilization
16. Which of the following would likely be a detrimental configuration change to a network dedicated for iSCSI traffic?
    1. Jumbo frames
    2. NIC teaming
    3. MPIO
    4. Dedicated LAN
17. Which of the following describes a computer that utilizes resources from a centralized server, rather than having local storage?
    1. Thick client
    2. Thin client
    3. Desktop
    4. Laptop
18. Which of the following would be a good practice when considering network security?
    1. Implementing anti-malware / anti-virus
    2. Requiring strong passwords for all devices
    3. Limiting remote access
    4. All are correct
19. Which of the following should *not*be done if an e-mail is suspected to be a phishing e-mail?
    1. Review the contact information of the sender to verify legitimacy
    2. Avoid clicking on any hyperlinks
    3. Open and analyze any attachments
    4. All are correct
20. On a Windows 10 client, which of the following keystrokes should be used when leaving the computer unattended?
    1. Ctrl + L
    2. Windows logo key + X
    3. Windows logo key + L
    4. Ctrl + X
21. Which of the following Wi-Fi frequencies would provide the best coverage and distance?
    1. 2.4 GHz
    2. 5 GHz
    3. 6 GHz
    4. 60 GHz
22. Which of the following Wi-Fi frequencies would provide the best speed and less interference?
    1. 900 MHz
    2. 2.4 GHz
    3. 3.65 GHz
    4. 5 GHz
23. Which of the following wireless encryption standards is most secure?
    1. WPA
    2. WPA2
    3. WPA3
    4. WEP
24. Which of the following wireless encryption standards is least secure?
    1. WPA
    2. WPA2
    3. WPA3
    4. WEP
25. The wireless encryption standard WPA3 uses which of the following methods for encryption?
    1. GCMP-256
    2. CCMP/AES
    3. TKIP + RC4
    4. RC4
26. The wireless encryption standard WPA2 uses which of the following methods for encryption?
    1. GCMP-256
    2. CCMP/AES
    3. TKIP + RC4
    4. RC4
27. Which of the following port and protocol combinations does FTP use?
    1. TCP + 20/21
    2. UDP + 20/21
    3. TCP + 23
    4. UDP + 23
28. Which of the following port and protocol combinations does SSH use?
    1. TCP + 23
    2. UDP + 23
    3. TCP + 22
    4. UDP + 22
29. Which of the following port and protocol combinations does DNS use?
    1. TCP + 53
    2. UDP + 53
    3. All of the above
    4. None are correct
30. Which of the following port and protocol combinations does DHCP use?
    1. TCP + 67/68
    2. UDP + 67/68
    3. None of the above
    4. All are correct
31. Which of the following port ranges would RDP fall under?
    1. Well-known ports
    2. Registered ports
    3. Ephemeral ports
    4. None are correct
32. Which of the following port ranges would port number 55555 fall under?
    1. Well-known ports
    2. Registered ports
    3. Ephemeral ports
    4. None are correct
33. Which of the following port ranges would HTTP fall under?
    1. Well-known ports
    2. Registered ports
    3. Ephemeral ports
    4. None are correct
34. Which of the following IEEE WLAN standards was the first standard to specify MIMO?
    1. 802.11g
    2. 802.11n
    3. 802.11ac
    4. 802.11ax
35. Which of the following IEEE WLAN standards has a theoretical maximum data rate of up to 3.46 Gbps at 5 GHz?
    1. 802.11g
    2. 802.11n
    3. 802.11ac
    4. 802.11ax
36. Which of the following IEEE WLAN standards is also known as Wi-Fi 6?
    1. 802.11g
    2. 802.11n
    3. 802.11ac
    4. 802.11ax
37. Which of the following address classes provides up to 254 hosts per network?
    1. Class A
    2. Class B
    3. Class C
    4. Class D
38. Which of the following address classes are not allocated to hosts and are used for multicasting?
    1. Class A
    2. Class B
    3. Class C
    4. Class D
39. Which of the following address classes has a 16-bit subnet mask?
    1. Class A
    2. Class B
    3. Class C
    4. Class D
40. Which of the following address classes provides up to 126 networks?
    1. Class A
    2. Class B
    3. Class C
    4. Class D
41. You are tasked with subnetting a network with 6 subnets, each subnet allowing at least 16 hosts, which of the following subnet masks would you use?
    1. 255.255.255.248
    2. 255.255.255.240
    3. 255.255.255.224
    4. 255.255.255.192
42. At which layer of the OSI model does a hub operate?
    1. Transport
    2. Network
    3. Data Link
    4. Physical
43. At which layer of the OSI model does a multilayer switch operate?
    1. Transport
    2. Network
    3. Data Link
    4. Physical
44. Which of the following is *true* with regards to a Trunk Port?
    1. Can only have a single VLAN configured
    2. Can have two or more VLANs configured
    3. Cannot have any VLANs configured
    4. None are correct
45. Which of the following is *true* with regards to an Access Port?
    1. Can only have a single VLAN configured
    2. Can have two or more VLANs configured
    3. Cannot have any VLANs configured
    4. None are correct
46. When troubleshooting a DNS resolution issue, which of the following Windows commands would likely *not* be helpful?
    1. netstat -ano
    2. ipconfig /all
    3. nslookup
    4. ping
47. Which of the following Windows commands could be used to determine which port number a process is listening on?
    1. msinfo32
    2. bcdedit /enumerate
    3. netsh interface ipv4 show global
    4. netstat -ano
48. Which of the following is *not*a valid Network Address Translation implementation method?
    1. Static NAT
    2. Dynamic NAT
    3. MAC Address Translation
    4. Port Address Translation
49. You are testing network connectivity between a client and server. Ping is failing with the following error:   
      
    “Ping request could not find host DC01.BPA.org. Please check the name and try again.”  
      
    Which of the following network protocols is the most likely culprit?
    1. ARP
    2. DHCP
    3. DNS
    4. 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 *most*likely needs to be configured?
    1. IP address
    2. Subnet mask
    3. Default gateway
    4. DNS server