Contestant Number: _____

Time: _____

Rank: _____

COMPUTER NETWORK TECHNOLOGY
(300)

REGIONAL – 2018

Multiple Choice:

Multiple Choice (50 @ 10 points each)   _____ (500 points)

TOTAL POINTS   _____ *(500 points)*

Failure to adhere to any of the following rules will result in disqualification:
1. **Contestant must hand in this test booklet and all printouts. 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 or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.**
3. **Electronic devices will be monitored according to ACT standards.**

No more than sixty (60) minutes testing time

MULTIPLE CHOICE
Identify the letter of the choice that best completes the statement or answers the question. Mark A if the statement is true. Mark B if the statement is false.

1. Which layer of the OSI Model is responsible for data encryption?
   a. Application
   b. Presentation
   c. Data Link
   d. Network

2. All of the following are considered to be valid MAC addresses, *except*_____.
   a. 01:23:45:67:89:AB
   b. AF:00:00:00:00:AF
   c. 24:DF:3G:C3:BB:08
   d. FF:10:A3:E0:91:BC

3. Which of the following is *not* an advantage of twisted pair cables?
   a. Least expensive form of networking cable
   b. Minimal cross-talk
   c. Supports analog and digital data transmission
   d. Is not susceptible to damage from a power surge

4. A computer network that extends over a large geographical distance most accurately describes which of the following?
   a. LAN
   b. WAN
   c. WLAN
   d. MAN

5. Routers operate on which layer of the OSI Model?
   a. Layer 3
   b. Layer 4
   c. Layer 5
   d. Layer 6

6. The binary 01101100.00010111.00000100.00001100 represents which of the following IPv4 addresses?
   a. 110.24.6.14
   b. 110.23.4.12
   c. 108.24.4.12
   d. 108.23.4.12

7. Which protocol is used to assign a dynamic IP address?
   a. ARP
   b. DHCP
   c. TLS
   d. RADIUS

8. Which network topology does *not* require the use of packet switching or broadcasting?
   a. Star
   b. Bus
   c. Mesh
   d. Point-to-Point

9. Subjects are only provided access as required to perform their duties describes which concept?
   a. Separation of duties
   b. Least privilege
   c. Implicit deny
   d. Need to know

10. 190.23.44.3 is an example of what IP address class?
    a. Class A
    b. Class B
    c. Class C
    d. Class D

11. Which protocol is *required* to translate the logical IP address into a MAC address?
    a. ARP
    b. TCP
    c. UDP
    d. DNS

12. A networking device designed for connecting wireless/wired client devices to a network is commonly referred to as a(n) _____.
    a. bridge
    b. switch
    c. access point
    d. router

13. Technologies that allow for the manipulation and prioritization of network traffic to improve the overall network effectiveness and performance are known as _____.
    a. packet filtering
    b. port forwarding
    c. packet shaping
    d. packet prioritization

14. A Virtual Private Network (VPN) is a system that uses a public network as a means for creating private encrypted connections between remote locations?
    a. True
    b. False

15. A _____ device may be the cause of poor network performance because it re-creates any incoming signal and sends it out on all connected ports.
    a. Bridge
    b. Switch
    c. Hub
    d. Router

16. Which of the following is *not* one of the AAA security architecture concepts?
    a. Accounting
    b. Authorization
    c. Authentication
    d. Access Control

17. Two computers have been networked *without* a hub and are having problems communicating. What is likely the cause of this issue?
    a. A multi-mode fiber-optic cable was used
    b. A cross-over cable was used
    c. A single-mode fiber optic cable was used
    d. A straight-through cable was used

18. Which layers of the OSI model include hubs, bridges, and routers, respectively?
    a. Physical, Physical, Data Link
    b. Physical, Data Link, Network
    c. Data Link, Data Link, Network
    d. Data Link, Physical, Network

19. Which of the following describes a VLAN?
    a. It virtually separates subnets using routers
    b. It assigns unique IP addresses to networked systems
    c. It creates a virtual firewall between networks
    d. It virtually separates subnets using switches

20. Which of the following devices connects network segment and provides a single broadcast domain but creates separate collision domains?
    a. Hub
    b. Router
    c. Switch
    d. Bridge

21. IPv6 is a _____ bit addressing scheme.
    a. 32
    b. 64
    c. 128
    d. 256

22. The IP address range of 172.12.0.0 to 172.31.0.0 belongs to Class _____.
    a. A
    b. B
    c. C
    d. D

23. _____ is a network's ability to continue working if some of it components fail.
    a. Redundancy
    b. Fault tolerance
    c. Availability
    d. Distribution

24. What is the maximum distance between segments on a 1000Base-SX network?
    a. 100 Meters
    b. 250 Meters
    c. 300 Meters
    d. 550 Meters

25. SMTP operates on which port?
    a. 23
    b. 25
    c. 80
    d. 124

26. Why can the IP address 224.0.1.1 *not* be assigned to a networked device?
    a. It is a reserved broadcast address.
    b. It is a reserved multicast address.
    c. It is not a valid IP address.
    d. It is a loopback address.

27. What is IANA?
    a. Internet Assigned Numbers Authority
    b. Internet Assigned Numbers Association
    c. International Association of Number Assignments
    d. International Academy of Number Assignments

28. A _____ transmission sends IP packets to a single recipient on a network?
    a. multicast
    b. unicast
    c. broadcast
    d. single mode

29. Which of the following is *not* a valid wireless specification?
    a. 802.11a
    b. 802.11g
    c. 802.11ac
    d. 802.11gc

30. The _____ command determines the number of hops an IP packet passes through on its way from source to destination?
    a. ARP
    b. PING
    c. TRACERT
    d. NETSTAT

31. When using the 2.4-GHz band for multiple access points in a WLAN located in the United States, which three non-overlapping channels should you use?
    a. 1,11,14
    b. 1,6,11
    c. 6,11,14
    d. 1,6,14

32. The WINS server is *not* available; NetBIOS name resolution can be performed statically using:
    a. LMHOSTS
    b. HOST
    c. SNMP
    d. DNS

33. Which type of malware can self-replicate without human intervention?
    a. Worm
    b. Virus
    c. Trojan horse
    d. None of the above

34. What type of firewall would you implement to prevent FTP traffic?
    a. Application layer
    b. Session layer
    c. Packet filtering
    d. All of the above

35. Which technology requires wireless users to authenticate using their own credentials?
    a. PSK
    b. WPA2
    c. WEP
    d. IEEE 802.1X

36. Which of the following is a sub-layer of the Data Link Layer?
    a. MAC
    b. DLL
    c. LLC
    d. A and C

37. A _____ allows a system to communicate on a remote network, without the need for explicit routes?
    a. Subnet mask
    b. DNS Server
    c. Default gateway
    d. NAT

38. _____ is the part of the TCP/ IP protocol suite that facilitates time synchronization?
    a. TFTP
    b. NTP
    c. UDP
    d. ARP

39. Which of the following commands would you use to view the system's network card configuration?
    a. PING
    b. ARP
    c. IPCONFIG
    d. NETSTAT

40. Another network administrator has disabled traffic on port 53; what network service is *not* available?
    a. DNS
    b. TCP
    c. POP3
    d. FTP

41. The weakening of data signals is referred to as _____.
    a. latency
    b. attenuation
    c. packet loss
    d. interference

42. _____ refers to an international standard for high-speed data communications over fiber optic media.
    a. SONET
    b. ISDN
    c. LTE
    d. HSPA+

43. _____ refers to the multiplexing methods used in fiber optic communications.
    a. CDMA
    b. CWDM
    c. CSMA
    d. All of the above

44. All of the following are applicable to satellite Internet connections, *except* _____.
    a. Interference (weather dependent)
    b. Signal Latency
    c. Low connection speed
    d. Lack of signal interference

45. _____ enables the use of different types of network protocols on the same network.
    a. MPLS
    b. MIBS
    c. MLPPP
    d. LWAPP

46. A leased line is a less costly alternative to VPN.
    a. True
    b. False

47. All of the following protocols reside at the application layer of the OSI model, *except*
    _____.
    a. HTTP
    b. FTP
    c. NETBIOS
    d. SMTP

48. Routers operate at which layer of the OSI model?
    a. 1
    b. 2
    c. 3
    d. 4

49. You are able to ping remote host by its IP address, but not by FQDN. Which of the following is the *most* probable source of the problem?
    a. DNS
    b. ARP
    c. IPv6
    d. DHCP

50. A "MTU black hole" refers to a situation where a router silently discards a packet that is larger than the maximum allowed packet size for the network link.
    a. True
    b. False