Imię: ..... **Data:** .....

Nazwisko: ..... **Stron:** .....

1. Which of the following protocols are examples of TCP/IP transport layer protocols? (Choose two answers.)
   a. Ethernet, **b.** HTTP, **c.** IP, **d.** UDP, **e.** SMTP, **f.** TCP

2. Which of the following protocols are examples of TCP/IP data link layer protocols? (Choose two answers.)
   a. Ethernet, **b.** HTTP, **c.** IP, **d.** UDP, **e.** SMTP, **f.** TCP, **g.** PPP

3. The process of HTTP asking TCP to send some data and making sure that it is received correctly is an example of what?
   a. Same-layer interaction, **b.** Adjacent-layer interaction, **c.** OSI model, **d.** All of these answers are correct.

4. The process of TCP on one computer marking a TCP segment as segment 1, and the receiving computer then acknowledging the receipt of TCP segment 1 is an example of what?
   a. Data encapsulation, **b.** Same-layer interaction, **c.** Adjacent-layer interaction, **d.** OSI model, **e.** All of these answers are correct.

5. The process of a web server adding a TCP header to the contents of a web page, followed by adding an IP header and then adding a data link header and trailer is an example of what?
   a. Data encapsulation, **b.** Same-layer interaction, **c.** OSI model, **d.** All of these answers are correct.

6. Which of the following terms is used specifically to identify the entity created when encapsulating data inside data link layer headers and trailers?
   a. Data, **b.** Chunk, **c.** Segment, **d.** Frame, **e.** Packet

7. Which OSI layer defines the functions of logical network-wide addressing and routing?
   a. Layer 1, **b.** Layer 2, **c.** Layer 3, **d.** Layer 4, **e.** Layer 5, 6, or 7

8. Which OSI layer defines the standards for cabling and connectors?
   a. Layer 1, **b.** Layer 2, **c.** Layer 3, **d.** Layer 4, **e.** Layer 5, 6, or 7

9. Which of the following terms are not valid terms for the names of the seven OSI layers? (Choose two answers.)
   a. Application, **b.** Data link, **c.** Transmission, **d.** Presentation, **e.** Internet, **f.** Session

10. In the LAN for a small office, some user devices connect to the LAN using a cable, while others connect using wireless technology (and no cable). Which of the following is true regarding the use of Ethernet in this LAN?
    a. Only the devices that use cables are using Ethernet., **b.** Only the devices that use wireless are using Ethernet., **c.** Both the devices using cables and those using wireless are using Ethernet., **d.** None of the devices are using Ethernet.

11. Which of the following Ethernet standards defines Gigabit Ethernet over UTP cabling?
    a. 10GBASE-T, **b.** 100BASE-T, **c.** 1000BASE-T, **d.** None of the other answers is correct.

12. Which of the following is true about Ethernet crossover cables for Fast Ethernet?
    a. Pins 1 and 2 are reversed on the other end of the cable., **b.** Pins 1 and 2 on one end of the cable connect to pins 3 and 6 on the other end of the cable., **c.** Pins 1 and 2 on one end of the cable connect to pins 3 and 4 on the other end of the cable., **d.** The cable can be up to 1000 meters long to cross over between buildings., **e.** None of the other answers is correct.

13. Each answer lists two types of devices used in a 100BASE-T network. If these devices were connected with UTP Ethernet cables, which pairs of devices would require a straight-through cable? (Choose three answers.)
    a. PC and router, **b.** PC and switch, **c.** Hub and switch, **d.** Router and hub, **e.** Wireless access point (Ethernet port) and switch

14. Which of the following is true about the CSMA/CD algorithm?
    a. The algorithm never allows collisions to occur., **b.** Collisions can happen, but the algorithm defines how the computers should notice a collision and how to recover., **c.** The algorithm works with only two devices on the same Ethernet., **d.** None of the other answers is correct.

15. Which of the following is true about the Ethernet FCS field?
    a. Ethernet uses FCS for error recovery., **b.** It is 2 bytes long., **c.** It resides in the Ethernet trailer, not the Ethernet header., **d.** It is used for encryption.

16. Which of the following are true about the format of Ethernet addresses? (Choose three answers.)
a. Each manufacturer puts a unique OUI code into the first 2 bytes of the address., **b.** Each manufacturer puts a unique OUI code into the first 3 bytes of the address., **c.** Each manufacturer puts a unique OUI code into the first half of the address., **d.** The part of the address that holds this manufacturer's code is called the MAC., **e.** The part of the address that holds this manufacturer's code is called the OUI., **f.** The part of the address that holds this manufacturer's code has no specific name.

17. Which of the following terms describe Ethernet addresses that can be used to send one frame that is delivered to multiple devices on the LAN? (Choose two answers.)
a. Burned-in address, **b.** Unicast address, **c.** Broadcast address, **d.** Multicast address

18. Which of the following are functions of OSI Layer 3 protocols? (Choose two answers.)
a. Logical addressing, **b.** Physical addressing, **c.** Path selection, **d.** Arbitration, **e.** Error recovery

19. Imagine that PC1 needs to send some data to PC2, and PC1 and PC2 are separated by several routers. Both PC1 and PC2 sit on different Ethernet LANs. What are the largest entities (in size) that make it from PC1 to PC2? (Choose two answers.)
a. Frame, **b.** Segment, **c.** Packet, **d.** L5 PDU, **e.** L3 PDU, **f.** L1 PDU

20. Which of the following is a valid Class C IP address that can be assigned to a host?
a. 1.1.1.1, **b.** 200.1.1.1, **c.** 128.128.128.128, **d.** 224.1.1.1, **e.** 223.223.223.255

21. What is the assignable range of values for the first octet for Class A IP networks?
a. 0 to 127, **b.** 0 to 126, **c.** 1 to 127, **d.** 1 to 126, **e.** 128 to 191, **f.** 128 to 192

22. PC1 and PC2 are on two different Ethernet LANs that are separated by an IP router. PC1's IP address is 10.1.1.1, and no subnetting is used. Which of the following addresses could be used for PC2? (Choose two answers.)
a. 10.1.1.2, **b.** 10.2.2.2, **c.** 10.200.200.1, **d.** 9.1.1.1, **e.** 225.1.1.1, **f.** 1.1.1.1

23. Imagine a network with two routers that are connected with a point-to-point HDLC serial link. Each router has an Ethernet, with PC1 sharing the Ethernet with Router1 and PC2 sharing the Ethernet with Router2. When PC1 sends data to PC2, which of the following is true?
a. Router1 strips the Ethernet header and trailer off the frame received from PC1, never to be used again., **b.** Router1 encapsulates the Ethernet frame inside an HDLC header and sends the frame to Router2, which extracts the Ethernet frame for forwarding to PC2., **c.** Router1 strips the Ethernet header and trailer off the frame received from PC1, which is exactly re-created by Router2 before forwarding data to PC2., **d.** Router1 removes the Ethernet, IP, and TCP headers and rebuilds the appropriate headers before forwarding the packet to Router2.

24. Which of the following does a router normally use when making a decision about routing TCP/IP packets?
a. Destination MAC address, **b.** Source MAC address, **c.** Destination IP address, **d.** Source IP address, **e.** Destination MAC and IP address

25. Which of the following are true about a LAN-connected TCP/IP host and its IP routing (forwarding) choices? (Choose two answers.)
a. The host always sends packets to its default gateway., **b.** The host sends packets to its default gateway if the destination IP address is in a different class of IP network than the host., **c.** The host sends packets to its default gateway if the destination IP address is in a different subnet than the host., **d.** The host sends packets to its default gateway if the destination IP address is in the same subnet as the host.

26. Which of the following are functions of a routing protocol? (Choose two answers.)
a. Advertising known routes to neighboring routers, **b.** Learning routes for subnets directly connected to the router, **c.** Learning routes, and putting those routes into the routing table, for routes advertised to the router by its neighboring routers, **d.** Forwarding IP packets based on a packet's destination IP address

27. A company implements a TCP/IP network, with PC1 sitting on an Ethernet LAN. Which of the following protocols and features requires PC1 to learn information from some other server device?
a. ARP, **b.** ping, **c.** DNS, **d.** None of the other answers are correct

28. 1. Which of the following is not a feature of a protocol that is considered to match OSI Layer 4?
a. Error recovery, **b.** Flow control, **c.** Segmenting of application data, **d.** Conversion from binary to ASCII

29. Which of the following header fields identify which TCP/IP application gets data received by the computer? (Choose two answers.)
a. Ethernet Type, **b.** SNAP Protocol Type, **c.** IP Protocol, **d.** TCP Port Number, **e.** UDP Port Number

30. 3. Which of the following are typical functions of TCP? (Choose four answers.)
a. Flow Control (windowing), **b.** Error recovery, **c.** Multiplexing using port numbers, **d.** Routing, **e.** Encryption, **f.** Ordered data transfer

31. Which of the following functions is performed by both TCP and UDP?
a. Windowing, **b.** Error recovery, **c.** Multiplexing using port numbers, **d.** Routing, **e.** Encryption, **f.** Ordered data transfer

32. What do you call data that includes the Layer 4 protocol header, and data given to Layer 4 by the upper layers, not including any headers and trailers from Layers 1 to 3? (Choose two answers.)
a. L3PDU, **b.** Chunk, **c.** Segment, **d.** Packet, **e.** Frame, **f.** L4PDU

33. In the URL http://www.certskills.com/ICND1, which part identifies the web server?
a. http, **b.** www.certskills.com, **c.** certskills.com, **d.** http://www.certskills.com, **e.** The file name.html includes the host name.

34. When comparing VoIP with an HTTP-based mission-critical business application, which of the following statements are accurate about the quality of service needed from the network? (Choose two answers.)
a. VoIP needs better (lower) packet loss., **b.** HTTP needs less bandwidth., **c.** HTTP needs better (lower) jitter., **d.** VoIP needs better (lower) delay.

35. Which of the following statements describes part of the process of how a switch decides to forward a frame destined for a known unicast MAC address?
a. It compares the unicast destination address to the bridging, or MAC address, table., **b.** It compares the unicast source address to the bridging, or MAC address, table., **c.** It forwards the frame out all interfaces in the same VLAN except for the incoming interface., **d.** It compares the destination IP address to the destination MAC address. **e.** It compares the frame's incoming interface to the source MAC entry in the MAC address table.

36. Which of the following statements describes part of the process of how a LAN switch decides to forward a frame destined for a broadcast MAC address?
a. It compares the unicast destination address to the bridging, or MAC address, table., **b.** It compares the unicast source address to the bridging, or MAC address, table., **c.** It forwards the frame out all interfaces in the same VLAN except for the incoming interface., **d.** It compares the destination IP address to the destination MAC address., **e.** It compares the frame's incoming interface to the source MAC entry in the MAC address table.

37. Which of the following statements best describes what a switch does with a frame destined for an unknown unicast address?
a. It forwards out all interfaces in the same VLAN except for the incoming interface., **b.** It forwards the frame out the one interface identified by the matching entry in the MAC address table., **c.** It compares the destination IP address to the destination MAC address., **d.** It compares the frame's incoming interface to the source MAC entry in the MAC address table.

38. Which of the following comparisons does a switch make when deciding whether a new MAC address should be added to its MAC address table?
a. It compares the unicast destination address to the bridging, or MAC address, table., **b.** It compares the unicast source address to the bridging, or MAC address, table., **c.** It compares the VLAN ID to the bridging, or MAC address, table., **d.** It compares the destination IP address's ARP cache entry to the bridging, or MAC address, table.

39. 5. PC1, with MAC address 1111.1111.1111, is connected to Switch SW1's Fa0/1 interface. PC2, with MAC address 2222.2222.2222, is connected to SW1's Fa0/2 interface. PC3, with MAC address 3333.3333.3333, connects to SW1's Fa0/3 interface. The switch begins with no dynamically learned MAC addresses, followed by PC1 sending a frame with a destination address of 2222.2222.2222. If the next frame to reach the switch is a frame sent by PC3, destined for PC2's MAC address of 2222.2222.2222, which of the following are true? (Choose two answers.)
a. The switch forwards the frame out interface Fa0/1., **b.** The switch forwards the frame out interface Fa0/2., **c.** The switch forwards the frame out interface Fa0/3., **d.** The switch discards (filters) the frame.

40. Which of the following devices would be in the same collision domain as PC1?
a. PC2, which is separated from PC1 by an Ethernet hub, **b.** PC3, which is separated from PC1 by a transparent bridge, **c.** PC4, which is separated from PC1 by an Ethernet switch, **d.** PC5, which is separated from PC1 by a router

41. Which of the following devices would be in the same broadcast domain as PC1? (Choose three answers.)
a. PC2, which is separated from PC1 by an Ethernet hub, **b.** PC3, which is separated from PC1 by a transparent bridge, **c.** PC4, which is separated from PC1 by an Ethernet switch, **d.** PC5, which is separated from PC1 by a router

42. Which of the following Ethernet standards support a maximum cable length of longer than 100 meters? (Choose two answers.)
a. 100BASE-T, **b.** 1000BASE-LX, **c.** 1000BAS-T, **d.** 100BASE-FX

43. A Cisco LAN switch connects to three PCs (PC1, PC2, and PC3), each directly using a cable that supports Ethernet UTP speeds up through 1000 Mbps (1 Gbps). PC1 uses a NIC that supports only 10BASE-T, while PC2 has a 10/100 NIC, and PC3 has a 10/100/1000 NIC. Assuming that the PCs and switch use IEEE autonegotiation, which PCs will use half-duplex? **a.** PC1, **b.** PC2, **c.** PC3, **d.** None of the PCs will use half-duplex.

44. Host A is a PC, connected to switch SW1 and assigned to VLAN 1. Which of the following are typically assigned an IP address in the same subnet as host A? (Select two answers)
a. The local router's WAN interface, **b.** The local router's LAN interface, **c.** All other hosts attached to the same switch, **d.** Other hosts attached to the same switch and also in VLAN 1

45. Why does the formula for the number of hosts per subnet ($2H - 2$) require the subtraction of two hosts?
a. To reserve two addresses for redundant default gateways (routers), **b.** To reserve the two addresses required for DHCP operation, **c.** To reserve addresses for the subnet ID and default gateway (router), **d.** To reserve addresses for the subnet broadcast address and subnet ID

46. A Class B network needs to be subnetted such that it supports 100 subnets and 100 hosts/subnet. Which of the following answers list a workable combination for the number of network, subnet, and host bits? (Select two answers.)
a. Network = 16, subnet = 7, host = 7, **b.** Network = 16, subnet = 8, host = 8, **c.** Network = 16, subnet = 9, host = 7, **d.** Network = 8, subnet = 7, host = 17

47. Which of the following are private IP networks? (Select two answers.)
a. 172.31.0.0, **b.** 172.32.0.0, **c.** 192.168.255.0, **d.** 192.1.168.0, **e.** 11.0.0.0

48. Which of the following are public IP networks? (Select three answers.)
a. 9.0.0.0, **b.** 172.30.0.0, **c.** 192.168.255.0, **d.** 192.1.168.0, **e.** 1.0.0.0

49. 6. Before Class B network 172.16.0.0 is subnetted by a network engineer, what parts of the structure of the IP addresses in this network already exist, with a specific size? (Select two answers.)
a. Network, **b.** Subnet, **c.** Host, **d.** Broadcast

50. A network engineer spends time thinking about the entire Class B network 172.16.0.0, and how to subnet that network. He then chooses how to subnet this Class B network and creates an addressing and subnetting plan, on paper, showing his choices. If you compare his thoughts about this network before subnetting the network, to his thoughts about this network after mentally subnetting the network, which of the following occurred to the parts of the structure of addresses in this network?
a. The subnet part got smaller., **b.** The host part got smaller., **c.** The network part got smaller., **d.** The host part was removed., **e.** The network part was removed

51. Which of the following terms are not used to reference the one number in each subnet used to uniquely identify the subnet? (Select two answers.)
a. Subnet ID, **b.** Subnet number, **c.** Subnet broadcast, **d.** Subnet name, **e.** Subnet address

52. Which of the following are not valid Class A network IDs? (Choose two answers.)
a. 1.0.0.0, **b.** 130.0.0.0, **c.** 127.0.0.0, **d.** 9.0.0.0

53. Which of the following are not valid Class B network IDs?
a. 130.0.0.0, **b.** 191.255.0.0, **c.** 128.0.0.0, **d.** 150.255.0.0, **e.** All are valid Class B network IDs

54. Which of the following are true about IP address 172.16.99.45's IP network? (Select two answers.)
a. The network ID is 172.0.0.0., **b.** The network is a Class B network., **c.** The default mask for the network is 255.255.255.0., **d.** The number of host bits in the unsubnetted network is 16.

55. Which of the following are true about IP address 192.168.6.7's IP network? (Select two answers.)
a. The network ID is 192.168.6.0., **b.** The network is a Class B network., **c.** The default mask for the network is 255.255.255.0., **d.** The number of host bits in the unsubnetted network is 16.

56. Which of the following is a network broadcast address?
a. 10.1.255.255, **b.** 192.168.255.1, **c.** 224.1.1.255, **d.** 172.30.255.255

57. Which of the following is a Class A, B, or C network ID?
a. 10.1.0.0, **b.** 192.168.1.0, **c.** 127.0.0.0, **d.** 172.20.0.1

58. Working at the help desk, you receive a call and learn a user's PC IP address and mask (10.55.66.77, mask 255.255.255.0). When thinking about this using classful logic, you determine the number of network (N), subnet (S), and host (H) bits. Which of the following is true in this case?
a. N=12, **b.** S=12, **c.** H=8, **d.** S=8, **e.** N=24

59. Working at the help desk, you receive a call and learn a user's PC IP address and mask (192.168.9.1/27). When thinking about this using classful logic, you determine the number of network (N), subnet (S), and host (H) bits. Which of the following is true in this case?
a. N=24, **b.** S=24, **c.** H=8, **d.** H=7

60. An engineer is thinking about the following IP address and mask using classless IP addressing logic: 10.55.66.77, 255.255.255.0. Which of the following statements are true when using classless addressing logic? (Choose two.)
a. The network part's size is 8 bits., **b.** The prefix length is 24 bits., **c.** The prefix length is 16 bits., **d.** The host part's size is 8 bits.

61. Which of the following statements is true about classless IP addressing concepts?
a. Uses a 128-bit IP address, **b.** Applies only for Class A and B networks, **c.** Separates IP addresses into network, subnet, and host parts, **d.** Ignores Class A, B, and C network rules

62. Which of the following masks, when used as the only mask within a Class B network, would supply enough subnet bits to support 100 subnets? (Choose two.)
a. /24, **b.** 255.255.255.252, **c.** /20, **d.** 255.255.252.0

63. When thinking about an IP address using classful addressing rules, an address can have three parts: network, subnet, and host. If you examined all the addresses in one subnet, in binary, which of the following answers correctly states which of the three parts of the addresses will be equal among all addresses? Pick the best answer.
a. Network part only, **b.** Subnet part only, **c.** Host part only, **d.** Network and subnet parts, **e.** Subnet and host parts

64. Which of the following statements are true regarding the binary subnet ID, subnet broadcast address, and host IP address values in any single subnet? (Choose two.)
a. The host part of the broadcast address is all binary 0s., **b.** The host part of the subnet ID is all binary 0s., **c.** The host part of a usable IP address can have all binary 1s., **d.** The host part of any usable IP address must not be all binary 0s.

65. Which of the following is the resident subnet ID for IP address 10.7.99.133/24?
a. 10.0.0.0, **b.** 10.7.0.0, **c.** 10.7.99.0, **d.** 10.7.99.128

66. Which of the following is the resident subnet for IP address 192.168.44.97/30?
a. 192.168.44.0, **b.** 192.168.44.64, **c.** 192.168.44.96, **d.** 192.168.44.128

67. Which of the following is the subnet broadcast address for the subnet in which IP address 172.31.77.201/27 resides?
a. 172.31.201.255, **b.** 172.31.255.255, **c.** 172.31.77.223, **d.** 172.31.77.207

68. A fellow engineer tells you to configure the DHCP server to lease the last 100 usable IP addresses in subnet 10.1.4.0/23. Which of the following IP addresses could be leased as a result of your new configuration?
a. 10.1.4.156, **b.** 10.1.4.254, **c.** 10.1.5.200, **d.** 10.1.7.200, **e.** 10.1.255.200

69. A fellow engineer tells you to configure the DHCP server to lease the first 20 usable IP addresses in subnet 192.168.9.96/27. Which of the following IP addresses could be leased as a result of your new configuration?
a. 192.168.9.126, **b.** 192.168.9.110, **c.** 192.168.9.1, **d.** 192.168.9.119