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Name:_____ Class:_____ Date:_____

Ch 02: Network Hardware Essentials

1. When a NIC is in promiscuous mode, it will process only the frames in which the destination MAC address matches its own MAC address.

a. True

b. False

ANSWER: False
POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: True / False
HAS VARIABLES: False
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2. Routers do not forward broadcast packets.

a. True

b. False

ANSWER: True
POINTS: 1
REFERENCES: Routers
QUESTION TYPE: True / False
HAS VARIABLES: False
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3. If a router receives a packet and it does not have an entry in its routing table for the destination network, it will send the packet to its default route, if configured.

a. True

b. False

ANSWER: True
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: True / False
HAS VARIABLES: False
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4. A computer's default gateway setting is the MAC address of a router on a remote network.

a. True

b. False

ANSWER: False
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: True / False

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HAS VARIABLES: False
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5. The name assigned to a wireless network is called the SSID.
   a. True
   b. False
ANSWER: True
POINTS: 1
REFERENCES: Wireless NICs
QUESTION TYPE: True / False
HAS VARIABLES: False
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6. Which device receives a frame and reads the source and destination MAC addresses before forwarding the frame out another port?
   a. router
   b. switch
   c. repeater
   d. hub
ANSWER: b
POINTS: 1
REFERENCES: Basic Switch Operation
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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7. What does a switch do if it doesn't find the destination MAC address in its switching table?
   a. sends an error to the sending device
   b. discards the frame
   c. sends an ARP to learn the MAC address
   d. forwards the frame out all ports
ANSWER: d
POINTS: 1
REFERENCES: Basic Switch Operation
QUESTION TYPE: Multiple Choice
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8. Which of the following is NOT a function of a hub?
   a. cleans up the signal
   b. transmits the frame out the correct port
   c. receives the signal from a connected computer on one of its ports
   d. regenerates the signal

ANSWER: b
POINTS: 1
REFERENCES: Multiport Repeaters and Hubs
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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9. How does a switch "learn" MAC addresses?
   a. All the MAC addresses must be entered manually.
   b. The switch comes loaded with the most frequently used addresses.
   c. It reads the source address and keeps a record of which port the sending computer is on.
   d. The switch uses a mathematical formula to determine what the MAC address would be for each computer connected to it.

ANSWER: c
POINTS: 1
REFERENCES: Basic Switch Operation
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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10. Which of the following is true about hubs?
   a. Devices on a hub have to share the available bandwidth.
   b. They can operate in full-duplex and half-duplex mode.
   c. They maintain a table of MAC addresses.
   d. They can handle several computer conversations simultaneously.

ANSWER: a
POINTS: 1
REFERENCES: Multiport Repeaters and Hubs
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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11. What does a switch store in its switching table?
   a. The frame's source MAC address and the port it was received on.

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b. The frame's destination MAC address and the port it was received on.
c. The frame's source IP address and the port it was received on.
d. The frame's destination IP address and the port it was received on.

ANSWER: a
POINTS: 1
REFERENCES: Network Switches
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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12. What type of frame is addressed to a specific computer?
a. broadcast
b. unicast
c. multicast
d. anycast

ANSWER: b
POINTS: 1
REFERENCES: Network Interface Cards
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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13. Just as a switch keeps records of MAC addresses that it has learned, so does your computer. What protocol does your computer use to learn MAC addresses?
a. ARP
b. ICMP
c. DHCP
d. IP

ANSWER: a
POINTS: 1
REFERENCES: Network Switches
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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14. What does it mean if the full-duplex indicator on a switch port is on?
a. The switch is detecting collisions.
b. The port can transmit and receive frames simultaneously.

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c. Bandwidth sharing is enabled.
d. The MAC address table is full.

ANSWER: b
POINTS: 1
REFERENCES: Network Switches
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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15. What component of the computer contains a MAC address?
a. motherboard
b. NIC
c. CPU
d. BIOS

ANSWER: b
POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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16. A MAC address is composed of two 24-bit numbers. What does the first 24-bit number represent?
a. A unique serial number assigned by the manufacturer.
b. The address it uses for a multicast packet.
c. The decryption key used for security purposes.
d. The organizationally unique identifier.

ANSWER: d
POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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17. What command issued from the command prompt will show the route that a packet travels from the issuing computer to another computer?
a. `route`
b. `tracert`
c. `ipconfig`

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d. `arp`

ANSWER: b
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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18. What is the purpose of the default route?
a. It serves as a guideline for how to configure routes.
b. It's a route set by Microsoft so that all information comes to their servers first.
c. It's where the router sends all packets with destination addresses of which it has no knowledge.
d. It's a route that all routers use to get to the Internet.

ANSWER: c
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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19. A wireless access point is most like which other network device, in that all computers send signals through it to communicate with other computers?
a. switch
b. router
c. hub
d. modem

ANSWER: c
POINTS: 1
REFERENCES: Wireless Access Points
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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20. When referring to network bandwidth, what is the basic unit of measurement?
a. bytes per second
b. bits per second
c. bandwidth per second
d. bytes per minute

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ANSWER: b
POINTS: 1
REFERENCES: Multiport Repeaters and Hubs
QUESTION TYPE: Multiple Choice
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21. In some wireless network configurations, a computer must send a special message to the AP before it can transmit data. What is this message called?

a. RTS
b. ARP
c. CTS
d. DNS

ANSWER: a
POINTS: 1
REFERENCES: Basic AP Operation
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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22. Which of the following is true about a NIC?

a. For incoming messages, it creates frames from packets.
b. For outgoing messages, it assembles bit signals into frames.
c. For incoming messages, it adds a source and destination MAC address.
d. For outgoing messages, it converts frame data into bit signals.

ANSWER: d
POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Multiple Choice
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23. What command would you issue from the command prompt to test whether your computer has connectivity to the network?

a. `ping IPaddress`
b. `arp -d IPaddress`
c. `ipconfig IPaddress`
d. `ipconfig /all`

ANSWER: a

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POINTS: 1
REFERENCES: Network Switches
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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24. Which of the following are features of a router? (Choose all that apply)
    a. connects computers to the LAN
    b. connects LANs to one another
    c. works with MAC addresses
    d. forwards broadcast packets
    e. works with packets

ANSWER: b, e
POINTS: 1
REFERENCES: Routers
QUESTION TYPE: Multiple Response
HAS VARIABLES: False
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25. Which of the following are true about routers? (Choose all that apply.)
    a. break up a network into functional groups
    b. make larger broadcast domains
    c. work with IP addresses
    d. forward broadcasts out all connected ports
    e. allow computers on different networks to communicate

ANSWER: a, c, e
POINTS: 1
REFERENCES: Routers
QUESTION TYPE: Multiple Response
HAS VARIABLES: False
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26. The _____ address is composed of two 24-bit numbers.

ANSWER: MAC
POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Completion
HAS VARIABLES: False

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27. In a computer's IP address settings, the default _____ is the address of the router to which a computer sends all packets that are intended for networks outside of its own.
ANSWER: gateway
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: Completion
HAS VARIABLES: False
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28. A _____ frame is a message that is intended to be processed by all devices on the LAN.
ANSWER: broadcast
POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Completion
HAS VARIABLES: False
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29. The network _____ is a measurement of the amount of data that can pass through a network in a certain period of time.
ANSWER: bandwidth
POINTS: 1
REFERENCES: Multiport Repeaters and Hubs
QUESTION TYPE: Completion
HAS VARIABLES: False
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30. A switch operating in full _____ mode can send and receive data at the same time.
ANSWER: duplex
POINTS: 1
REFERENCES: Basic Switch Operation
QUESTION TYPE: Completion
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic

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Match each item with a statement below.

a. switch
b. default route
c. half-duplex mode
d. router
e. bandwidth sharing
f. repeater
g. CTS
h. network interface card
i. uplink port
j. network bandwidth

REFERENCES: Glossary
QUESTION TYPE: Matching
HAS VARIABLES: False
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31. device that uses MAC addresses to determine the destination of frame
ANSWER: a
POINTS: 1

32. routing table entry that tells a router where to send a packet with a destination network address that can't be found in the routing table
ANSWER: b
POINTS: 1

33. communication in which a device can send and receive signals but not at the same time
ANSWER: c
POINTS: 1

34. device that connects LANs
ANSWER: d
POINTS: 1

35. how devices connected to a hub use network bandwidth
ANSWER: e
POINTS: 1

36. device that only regenerates incoming signals
ANSWER: f

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POINTS: 1

37. indicates that the wireless computer can transmit data
ANSWER: g
POINTS: 1

38. device that connects a computer with the network medium
ANSWER: h
POINTS: 1

39. designated port on a hub or switch used to connect to another hub or switch
ANSWER: i
POINTS: 1

40. amount of data that can be transferred on a network in a specified interval
ANSWER: j
POINTS: 1

41. Why is the NIC considered the "gatekeeper"?

ANSWER:	The NIC's responsibility is to examine every frame that is received and either allow it access to the computer or reject it. In order for the frame to be accepted, the destination MAC address must match the NIC's MAC address, or it is refused. There are two exceptions to this rule. If the destination MAC address is a broadcast, then the NIC accepts it. If the NIC is put in promiscuous mode, then it will accept all frames.
POINTS:	1
REFERENCES:	NIC Basics
QUESTION TYPE:	Subjective Short Answer
HAS VARIABLES:	False
STUDENT ENTRY MODE:	Basic
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42. What are the major differences between a hub and a switch?

ANSWER:	The major difference is that switches are intelligent. They examine each frame that they receive for the destination MAC address and then send the frame out the correct port for that address. A hub simply accepts a frame from one of its ports and then sends it out all ports. A switch also keeps a table of MAC addresses so that it knows where to send a frame. Because a switch can control where it sends a frame, devices that are connected to a switch can communicate at the same time, allowing each device to access the full network bandwidth. With a hub, only one device can transmit at a time so the bandwidth is shared among all connected devices. Also, because a switch controls the flow of frames, there is little chance of a collision. In a hub, collisions might occur frequently when under heavy use.
POINTS:	1
REFERENCES:	Network Switches
QUESTION TYPE:	Subjective Short Answer

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43. List the five steps that a switch performs for each frame.
ANSWER: A switch's operation can be summarized in these steps: 1. The switch receives a frame. 2. The switch reads the source and destination MAC addresses. 3. The switch looks up the destination MAC address in its switching table. 4. The switch forwards the frame to the port where the computer owning the MAC address is found. 5. The switching table is updated with the source MAC address and port information.
POINTS: 1
REFERENCES: Network Switches
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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44. What are broadcast frames and how are they handled by switches and routers?
ANSWER: A broadcast frame is a frame that has a destination MAC address of all binary 1s, which in hexadecimal notation reads as FF-FF-FF-FF-FF-FF. Broadcast frames carry messages that are intended for all devices on a network. Broadcast frames are forwarded by hubs and switches but not by routers.
POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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45. What are the key differences between a switch and a router?
ANSWER: The following points summarize the key properties and features of a router versus a switch: Routers connect LANs, and switches connect computers. Routers work with logical (IP) addresses rather than physical (MAC) addresses. Routers work with packets rather than the frames that switches work with. Routers don't forward broadcast packets, but switches do. Routers use routing tables, and switches use switching tables.
POINTS: 1
REFERENCES: Routers
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
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46. What does a router keep in its routing table?

ANSWER: A router keeps information about the networks it knows about and which interface that network can be reached from in its routing table.
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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47. What is the importance of a default route?

ANSWER: When a router receives a packet, it looks at the destination IP address to determine where to send the packet. If the router has an entry for the network that the packet is intended for, then everything is fine, and it forwards the packet. However, if there is no entry in the routing table and no default route, then the router does not keep the packet; it simply discards it. If a default route is entered, then the router forwards the packet out the interface listed in the routing table so the packet is not discarded.
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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48. What is a default gateway?

ANSWER: A computer on a LAN can communicate with other devices on the same LAN because a switch uses the computer's physical address. However, when a computer wants to communicate with a device on another network, it must send the packet to the router so the computer needs to know the address of the router. The address of the router is considered the default gateway. It is where all packets sent from the computer to destinations other than its own network are sent. This address is included in a computer's IP configuration.
POINTS: 1
REFERENCES: Routers Work with IP Addresses and Routing Tables
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
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49. What are the major tasks that a NIC performs?

ANSWER: The following list summarizes the tasks a NIC and its driver perform: Provide a connection

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from the computer to the network medium. For incoming messages, receive bit signals and assemble them into frames, verify the frame's destination address, remove the frame header and trailer, and transfer the packet to the network protocol. For outgoing messages, receive packets from the network protocol and create frames by adding source and destination MAC addresses and error-checking data. Convert the frame data into bit signals in a format suitable for the network medium and transmit the signals.

POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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50. What is the MAC address of a computer?

ANSWER: The MAC address is a number that is burned into the memory of each NIC. It is a unique number assigned by the manufacturer. It is 48 bits and is usually expressed in six two-digit hexadecimal numbers. The first 24 bits are an ID number for the manufacturer, called the OUI, and the last 24 bits are a serial number assigned by the manufacturer.

POINTS: 1
REFERENCES: NIC Basics
QUESTION TYPE: Subjective Short Answer
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