2.4.6 Practice Questions

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Score: 100%

Passing Score: 80%

Question 1. ✓ Correct

Drag the information type on the left to the appropriate layer of the TCP/IP model it is associated with on the right.

Transport Layer	Link Layer
✓ Segments	✓ Frames
Application Layer	Internet Layer
✓ Data	✓ Packets

Explanation

Encapsulation is the process of breaking a message into packets, adding control and other information, and transmitting the message through the transmission media. You need to know the following four-step data encapsulation process on the sending system using the TCP/IP model:

- The Application layer prepares the data to be sent through the network.
- The Transport layer breaks the data into pieces called segments, adding sequencing and control information.
- The Internet layer converts the segments into packets, adding logical network and device addresses.
- The Link layer converts the packets into frames, adding physical device addressing information. It also converts the frames into bits for transmission across the transmission media.

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4.1.2 Numbering System Facts

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Question 2. ✓ Correct

The process of breaking a message into packets, adding control information and other information, and then transmitting the message through the transmission medium is known as _____?

- Transformation
- → Encapsulation
- Sequencing
- Segmentation

Explanation

Encapsulation is the process of breaking a message into packets, adding control and other information, and then transmitting the message through the transmission medium.

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Question 3. ✓ Correct

Match the TCP/IP layers with their function.

Breaks the data into pieces.

✓ Transport

Prepares the data to be sent.

✓ Application

Adds physical addesses.

✓ Link

Adds logical addresses.

✓ Internet

Explanation

1. The Application layer prepares the data to be sent through the network.
2. The Transport layer breaks the data into pieces called segments, adding sequencing and control information.
3. The Internet layer converts the segments into packets, adding logical network and device addresses.
4. The Link layer converts the packets into frames, adding physical device addressing information and a frame check sequence footer for error detection. It also converts the frames into bits (0s and 1s) for transmission across the transmission media.

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Question 4. ✓ Correct

What is the purpose of a frame check sequence (FCS) footer?

- ○ Control information
- ○ Holds segment data
- ○ Contains logical network addresses
- → ◉ Checksum error detection

Explanation

The Link layer converts the packets into frames, adding physical device addressing information and a frame check sequence footer for error detection. It also converts the frames into bits (0s and 1s) for transmission across the transmission media.

Control information is added at the Transport layer.

The Transport layer breaks the data into pieces called segments.

The Internet layer converts the segments into packets, adding logical network and device addresses.

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Question 5. ✓ Correct

What term does the OSI model use that is different from the TCP/IP model uses to refer to frame, packet, and segment?

→ ◉ Protocol data unit (PDU)

○ Session

○ IEEE Ethernet standard

○ Presentation

Explanation

The OSI model uses the term protocol data unit (PDU) instead of the terms frame, packet and segment.

Presentation and session are layers 5 and 6 of the OSI model respectively and do not correspond to the use of frame, packet, and segment in the TCP/IP model.

IEEE Ethernet standard refers to the standard that defines Ethernet.

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Question 6. ✓ Correct

What role does ARP play in the routing process?

- If a router does not know a destination device's IP address, it sends an ARP broadcast containing the destination device's MAC address and requesting its IP address.
- → If a router does not know a destination device's MAC address, it sends an ARP broadcast containing the destination device's IP address and requesting its MAC address.
- If a router knows the MAC and IP address of a destination host, it sends an ARP request to update the other routers' route tables.
- ARP does not play any role in the routing process. Switches use ARP to map IP addresses to MAC addresses in collision domains.

Explanation

ARP (Address Resolution Protocol) resolves IP addresses into MAC addresses. Routers and other network devices use ARP when their routing tables do not contain the MAC addresses of the devices on the local LAN to which they need to forward frames.

References

2.4.5 Network Communication Process Facts

resources\text\t_ipcommf_ccna7\q_ipcommf_01_ccna7.question.xml

Question 7. ✓ Correct

Routing data between computers on a network requires several mappings between different addresses. Which of the following statements is true?

→ ◉ Routers use ARP to resolve known IP addresses into MAC addresses.

○ Diskless workstations use ARP to ask a server for an IP address.

○ ICMP lets routers bypass the general network broadcast by providing a dynamic table of IP-to-MAC address mappings.

○ Routers use DNS to resolve MAC addresses of diskless workstations into IP addresses based on the information contained in other routers' route tables.

Explanation

ARP lets routers resolve known IP addresses into MAC addresses by broadcasting requests to the network.

DNS is used to map hostnames to IP addresses. ARP is used to map IP addresses to MAC addresses. Diskless workstations use BOOTP to discover their IP address, the server's IP address, and the boot files they should use. ICMP notifies routers of problems on the network and undeliverable packets.

References

2.4.5 Network Communication Process Facts

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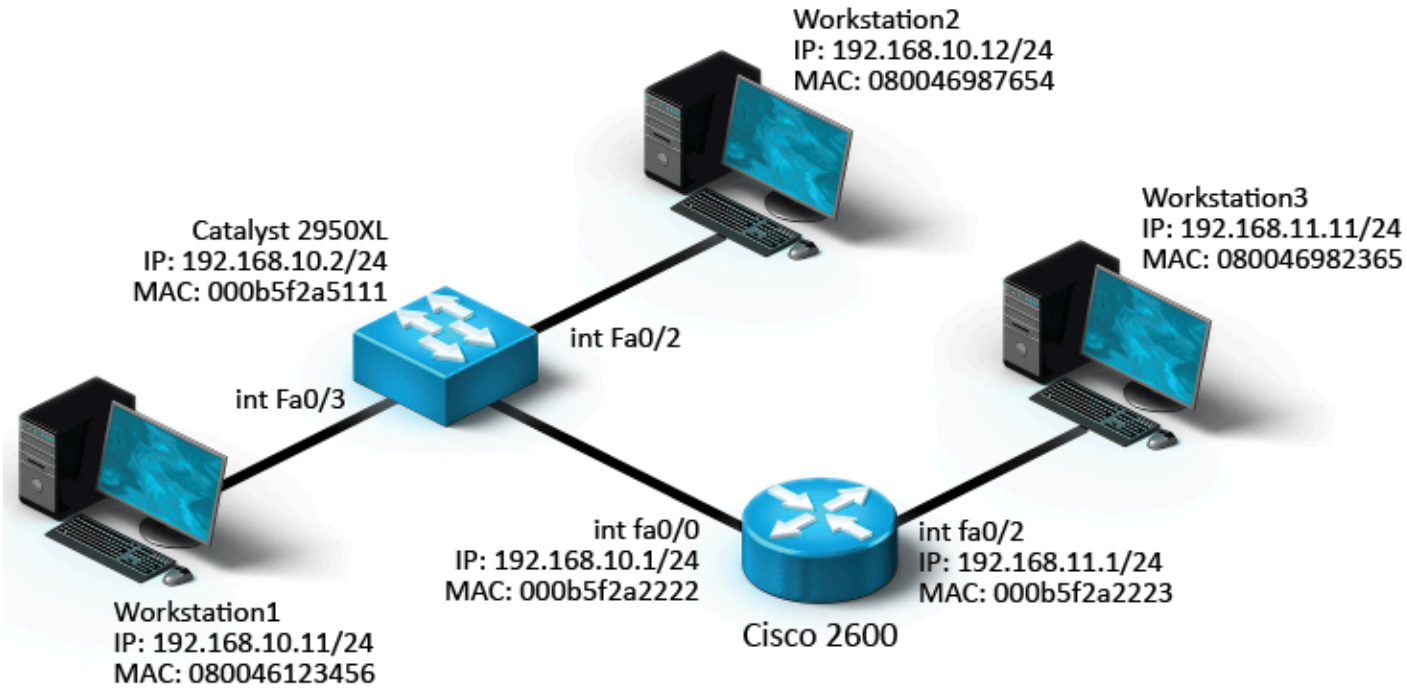
Question 8.

✓ Correct

Workstation2 needs to send data to Workstation3. Identify the Layer 2 and Layer 3 addresses Workstation2 will use to send the data by dragging the corresponding address from the list on the left to its location on the right.



Layer 2 source address

✓ 080046987654

Layer 3 source address

✓ 192.168.10.12

Layer 2 destination address

✓ 000b5f2a2222

Layer 3 destination address

✓ 192.168.11.11

Explanation

Workstation2 uses the following addresses to send the data:

- The source Layer 2 address is its own MAC address, 080046987654.
- The source Layer 3 address is its own IP address, 192.168.10.12.
- The destination Layer 2 address is the MAC address of the default gateway router, 000b5f2a2222. The MAC address is the address of the interface connected to the same subnet as Workstation2.
- The destination Layer 3 address is the IP address of the destination device (Workstation3), 192.168.11.11.

References

2.4.5 Network Communication Process Facts

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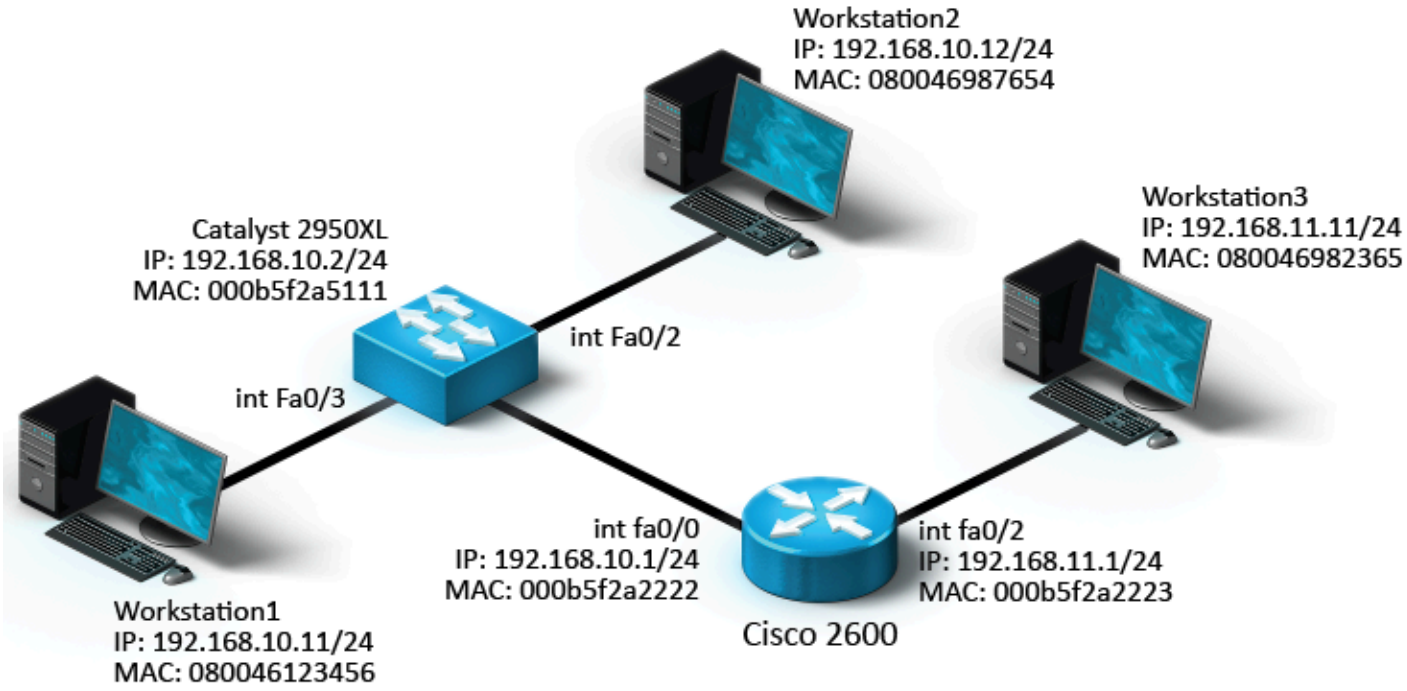
Question 9.

✓ Correct

Workstation3 has started communicating with Workstation2. It sends a frame to the default gateway. Identify the Layer 2 and Layer 3 addresses used by the Cisco 2600 router to forward the data to Workstation2 by dragging the corresponding address from the list on the left to its location on the right.



Layer 2 source address

✓ 000b5f2a2222

Layer 3 source address

✓ 192.168.11.11

Layer 2 destination address

✓ 080046987654

Layer 3 destination address

✓ 192.168.10.12

Explanation

The Cisco 2600 router is the default gateway. When it receives a frame from Workstation3, it examines the Layer 3 address in the packet to locate the destination device. Then it creates a new frame and modifies the source and destination Layer 2 addresses (MAC addresses) as follows:

- The source Layer 2 address is its own MAC address on the same segment as the destination device, 000b5f2a222.
- The destination Layer 2 address is the MAC address of the destination device, 080046987654.

The source and destination Layer 3 addresses (IP addresses) do not change.

- The source IP address is the IP address of Workstation3 is 192.168.11.11.
- The destination IP address is the IP address of Workstation2 is 192.168.10.12.

References

2.4.5 Network Communication Process Facts

resources\text\t_ipcommf_ccna7\q_ipcommf_04_ccna7.question.xml

Question 10. ✓ Correct

During network transmission, data is transferred to various routers, which forward the data to the appropriate network. If the source and destination network addresses reside on the same network, which protocol is used to determine the MAC address of the destination IP address?

- HTTP get
- TCP
- → ARP
- UDP

Explanation

The Address Resolution Protocol (ARP) is used to determine the host's MAC address using the destination IP address.

An HTTP get requests web page information from a web server.

UDP and TCP are both Transport layer protocols.

References

2.4.5 Network Communication Process Facts

resources\text\t_ipcommf_ccna7\q_ipcommf_05_ccna7.question.xml