

Name \_\_\_\_\_ Date \_\_\_\_\_

## **Module 2 – Switching Concepts**

### **Switching, Routing, and Wireless Essentials – Semester 2**

### **Student Version**

#### **Module 1 Sections:**

- 2.0 Introduction
- 2.1 Frame Forwarding
- 2.2 Switching Domains
- 2.3 Module Practice and Quiz

#### **Required Materials:**

Reading Organizer

Packet Tracer Activities:      None

Labs:   None

Module's 1 - 4 Exam

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Name \_\_\_\_\_ Date \_\_\_\_\_

## Module 2 – Switching Concepts

### Reading Organizer

#### Instructor Version

**Note:** The Reading Organizer has weighted scoring. Any question with the word **explain, define, or describe** in it is expected to have a longer answer and is worth two points each.

**After completion of this module, you should be able to:**

- Explain how frames are forwarded in a switched network.
- Compare a collision domain to a broadcast domain.

### 2.1 Frame Forwarding

1. There are two terms associated with frames entering and leaving an interface. List and describe both.

a. \_\_\_\_\_ -

b. \_\_\_\_\_ -

2. A LAN switch forwards traffic based on the \_\_\_\_\_ and the \_\_\_\_\_ address of an Ethernet frame.

3. An Ethernet frame will never be forwarded out the \_\_\_\_\_ port it was on which it was received.

4. Switches use \_\_\_\_\_ addresses to direct network communications through the switch, out the appropriate port, toward the destination.

5. As the switch learns the relationship of ports to devices, it builds a table called a \_\_\_\_\_ table.

6. This table is stored in \_\_\_\_\_ or (CAM) which is a special type of memory used in high-speed searching applications.

7. A switch populates its MAC address table by recording the \_\_\_\_\_ address of each device connected to each of its ports.

8. Explain the two-step process that is performed on every Ethernet frame that enters a switch.

Step 1. Learn - Examining the Source MAC Address –

Step 2. Forward - Examining the Destination MAC Address –

9. List and describe the two methods layer 2 switches use to switch frames.

a. \_\_\_\_\_ -

b. \_\_\_\_\_ -

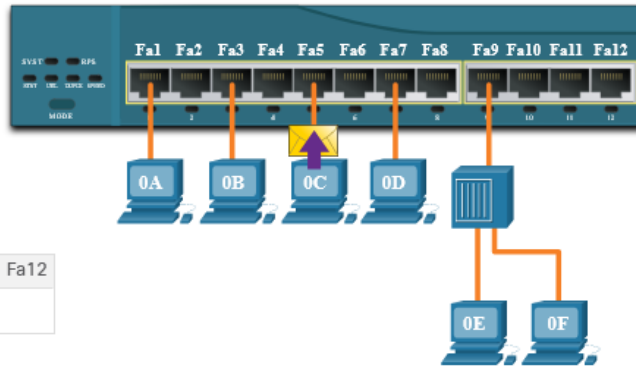
10. The cut-through switching method may forward invalid frames because no \_\_\_\_\_ is performed.

11. Explain how fragment free switching differs from cut-through switching.

12. Check the correct answers to the questions below.

Frame

Preamble	Destination MAC	Source MAC	Type / Length	Frame	End of Frame
	0E	0C			



MAC Table

Fa1	Fa2	Fa3	Fa4	Fa5	Fa6	Fa7	Fa8	Fa9	Fa10	Fa11	Fa12
						0D					

Question 1 - Where will the switch forward the frame?

- Fa1  
  Fa2  
  Fa3  
  Fa4  
  Fa5  
  Fa6  
  Fa7  
  Fa8  
  Fa9  
  Fa10  
  Fa11  
  Fa12

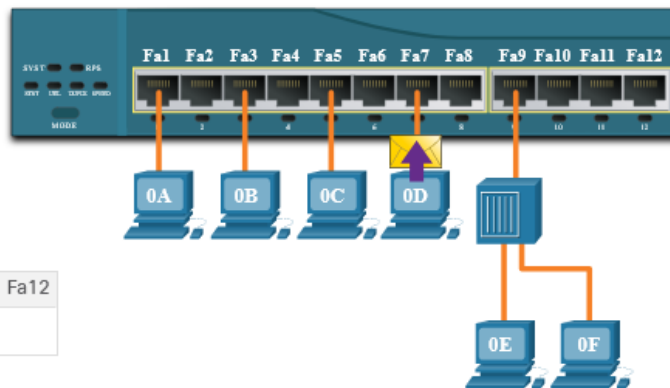
Question 2 - When the switch forwards the frame, which statement(s) are true?

- Switch adds the source MAC address which is currently not in the MAC address table.  
 Frame is a broadcast frame and will be forwarded to all ports.  
 Frame is a unicast frame and will be sent to specific port only.  
 Frame is a unicast frame and will be flooded to all ports.  
 Frame is a unicast frame but it will be dropped at the switch.

13. Check the correct answers to the questions below.

Frame

Preamble	Destination MAC	Source MAC	Type / Length	Frame	End of Frame
	0A	0D			



MAC Table

Fa1	Fa2	Fa3	Fa4	Fa5	Fa6	Fa7	Fa8	Fa9	Fa10	Fa11	Fa12
0A								0E			

Question 1 - Where will the switch forward the frame?

- Fa1  
  Fa2  
  Fa3  
  Fa4  
  Fa5  
  Fa6  
  Fa7  
  Fa8  
  Fa9  
  Fa10  
  Fa11  
  Fa12

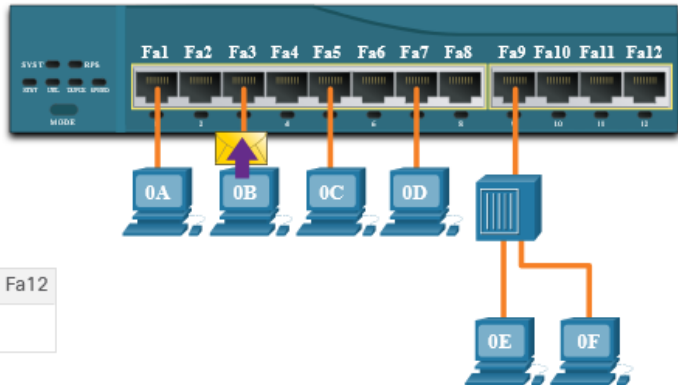
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 Frame is a unicast frame and will be flooded to all ports.  
 Frame is a unicast frame but it will be dropped at the switch.

14. Check the correct answers to the questions below.

Frame

Preamble	Destination MAC	Source MAC	Type / Length	Frame	End of Frame
	0F	0B			



MAC Table

Fa1	Fa2	Fa3	Fa4	Fa5	Fa6	Fa7	Fa8	Fa9	Fa10	Fa11	Fa12
0A		0B						0E	0F		

Question 1 - Where will the switch forward the frame?

- Fa1  
  Fa2  
  Fa3  
  Fa4  
  Fa5  
  Fa6  
  Fa7  
  Fa8  
  Fa9  
  Fa10  
  Fa11  
  Fa12

Question 2 - When the switch forwards the frame, which statement(s) are true?

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## 2.2 Switching Domains

15. Network segments that share the same bandwidth between devices are known as \_\_\_\_\_.

16. When two or more devices within the same \_\_\_\_\_ try to communicate at the same time, a \_\_\_\_\_ will occur.

17. Are there collision domains when a switch is running in full-duplex mode?

18. By default, Ethernet switch ports will \_\_\_\_\_ full-duplex when the adjacent device can also operate in full-duplex.

19. A collection of interconnected switches forms a single \_\_\_\_\_ domain.

20. Only a network layer device, such as a \_\_\_\_\_, can divide a Layer 2 broadcast domain.

21. Routers are used to segment \_\_\_\_\_ domains, but will also \_\_\_\_\_ a collision domain.

22. When a switch receives a \_\_\_\_\_ frame, it forwards the frame out each of its ports, except the ingress port where the broadcast frame was received.

23. List and describe the characteristics of switches that alleviate network congestion.

a. \_\_\_\_\_ -

b. \_\_\_\_\_ -

c. \_\_\_\_\_ -

d. \_\_\_\_\_ -