Networks Sub-module Assignment Answers for Part 2 and Part 3

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Part 2: Analyse a simple wireless network

1)See below ***figure 1***.

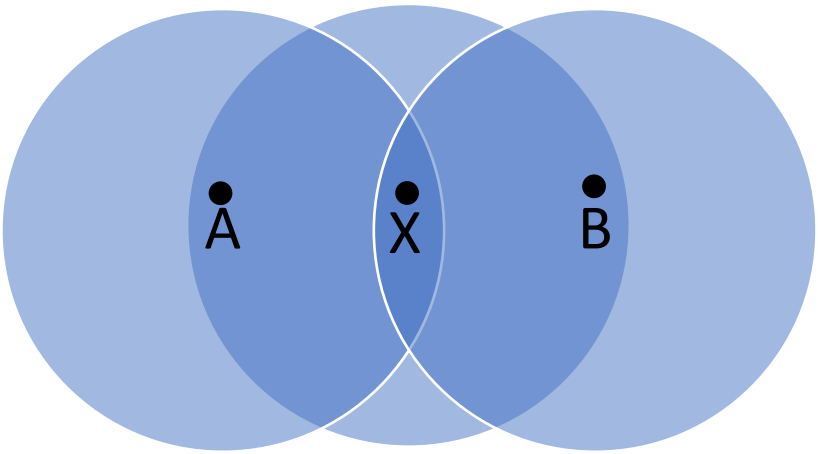

Figure 1. A wireless network topology including wireless nodes X, A and B, and their coverage. Wireless nodes A and B cannot hear each other's transmissions, X can hear A and B.

2)Analysis and description of the transmission procedure for the wireless network:

Time 0 μs:

- X is sending a packet to some other node which takes 100 μs.

Time 20 μs:

- A is ready to transmit a packet so begins sensing the channel. Node X is found, and the channel is busy so the backoff timer of 40 μs begins.

Time 60 μs:

- Node A backoff timer finishes and begins sensing channel. Node X is found, and the channel is busy so the backoff timer of 40 μs is started.
- Node B is ready to transmit a packet so begins sensing the channel. Node X is found, and the channel is busy so the backoff timer of 60 μs begins.

Time 100 μs:

- X finishes packet transmission. Node A backoff timer finishes and begins sensing the channel. Node X is found, and the channel is free, so A begins sending the packet which takes 150 μs.

Time 120 μs:

- Node B backoff timer finishes and B begins sensing the channel. Node X is found, and B finds the channel to be free so begins sending the packet which takes 100 μs.
- At node X transmission from A and B collide but since A and B cannot hear each other interference is not detected, and transmission continues.

Time 220 μs:

- Transmission from B finishes.

Time 250 μs:

- Transmission from A finishes.

Part 3: Understand switch operations

1)See below ***Table 1,*** showing which frames are sent out the switch when monitoring ports 0-3.

		Port Monitored			
		0	**1**	**2**	**3**
Frame(s) Sent	**0**				
	1		✓		
	2			✓	
	3			✓	
	4		✓		
	5		✓		

Table 1

A frame is sent into the switch via the port connected to the device with the source MAC address. A frame is sent out from the switch via the port connected to the device with the destination MAC address.

2)See below ***Table 2,*** showing the switching table formed after forwarding the 5 frames.

MAC Address	Port
40-4A-18-B2-63-DA	0
AC-D9-D6-57-24-A3	3
00-0C-2B-AF-18-7B	1
04-5D-56-3E-A3-B4	4

Table 2

Device 2 with MAC address 00-1D-D1-BC-DF-73 is connected to port 2. In the 5 frames forwarded this MAC address is never the source address therefore never added to the switching table.