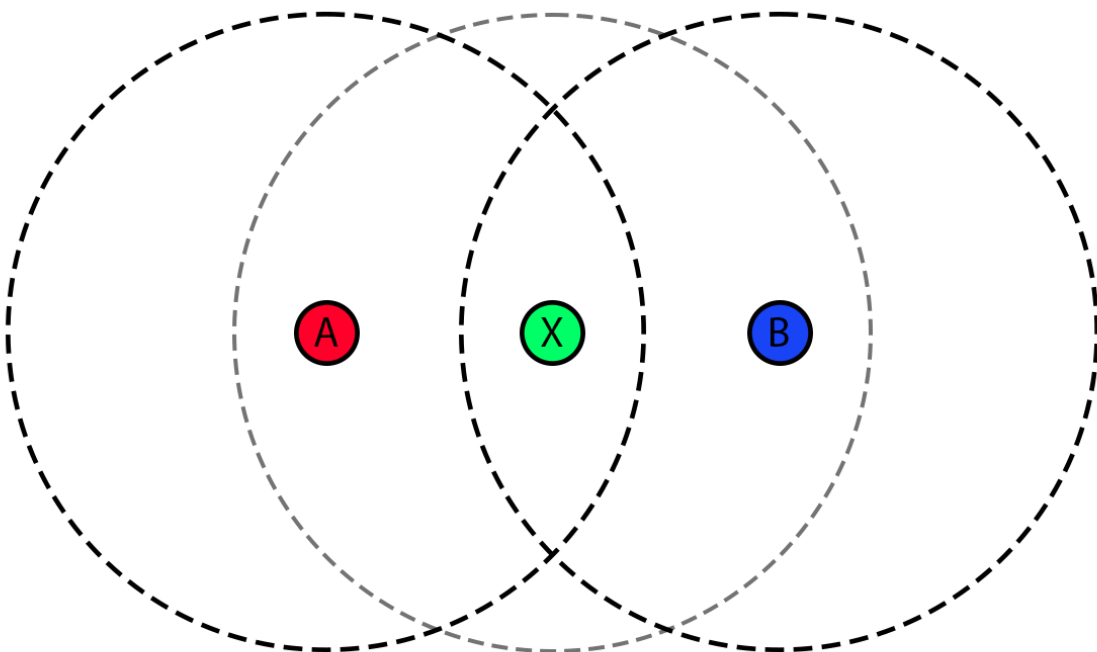# Networks Sub-module Assignment Answers for Part 2 and Part 3

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Part 2

Question 1 - Sketch the above described topology to include wireless nodes X, A, B, and their coverage.

Question 2 - Analyse the above transmission situation and describe the transmission procedure.

At $t = 0\mu s$, X will begin sending its packet to the other node that is not A or B on the wireless network.

At $t = 20\mu s$, A will sense that the channel to X is busy, so it will start a back-off timer of $40\mu s$ before checking again, at $t = 60\mu s$

At $t = 60\mu s$, both A and B will try to sense whether the channel to X is idle. X is still transmitting data to the other node, so it is not. A and B will both be able to sense this (due to X being in range of them), and thus will wait for their respective back-off times of $40\mu s$ and $60\mu s$, before checking again (at $t = 100\mu s$ and $t = 120\mu s$ respectively).

At $t = 100\mu s$, X now completes sending its packet to the other node, so the channel is finally free. A checks, and sense this, so it begins sending a packet to X. This will be completed at $t = 250\mu s$.

Because B cannot hear A, it is consequently a hidden node to B. As such, at $t = 120\mu s$, when checking if X is idle, B will determine that it is indeed idle. As a result, it will begin transmitting its packet to X until $t = 220\mu s$

At $t = 220\mu s$, B will stop transmitting to X, and at $t = 250\mu s$, A will stop also. At this point, X would know an error has occurred due to its data being corrupted through interference, between the times $t = 120\mu s$ to $t = 220\mu s$. Hence, it would send a request to both nodes, requesting them to resend their packet.

Part 3

Question 1 - Which of these frames will be sent out from selected ports.

Frames 0, 1, 2 and 3 are observed being sent out of all the ports (with exception to the port they came in via), due to none of their destinations being contained in the switching table at the time.

Only frames 4 and 5, are sent out exclusively from the port of the corresponding destination MAC address, which in both cases, is via port 1.

The details of which frames are observed being sent out of each port is shown below:

Port 0: Frame 1, Frame 3

Port 1: Frame 0, Frame 1, Frame 2, Frame 4, Frame 5

Port 2: Frame 0, Frame 1, Frame 2, Frame 3

Port 3: Frame 0, Frame 2, Frame 3

Question 2 - Give the switching table that the switch forms after forwarding these 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