Problem 1

Output corresponding to bit d_1 = [-1,1,-1,1,-1,1,-1,1]
Output corresponding to bit d_0 = [1,-1,1,-1,1,-1,1,-1]

Problem 5

a) The two APs will typically have different SSIDs and MAC addresses. A wireless station arriving to the café will associate with one of the SSIDs (that is, one of the APs). After association, there is a virtual link between the new station and the AP. Label the APs AP1 and AP2. Suppose the new station associates with AP1. When the new station sends a frame, it will be addressed to AP1. Although AP2 will also receive the frame, it will not process the frame because the frame is not addressed to it. Thus, the two ISPs can work in parallel over the same channel. However, the two ISPs will be sharing the same wireless bandwidth. If wireless stations in different ISPs transmit at the same time, there will be a collision. For 802.11b, the maximum aggregate transmission rate for the two ISPs is 11 Mbps.

b) Now if two wireless stations in different ISPs (and hence different channels) transmit at the same time, there will not be a collision. Thus, the maximum aggregate transmission rate for the two ISPs is 22 Mbps for 802.11b.

Problem 8

a) 1 message/ 2 slots
b) 2 messages/slot
c) 1 message/slot

d) i) 1 message/slot
ii) 2 messages/slot
iii) 2 messages/slot

e) i) 1 message/4 slots
ii) slot 1: Message A→ B, message D→ C
slot 2: Ack B→ A
slot 3: Ack C→ D

= 2 messages/ 3 slots

iii)
slot 1: Message C→ D
slot 2: Ack D→C, message A→ B
slot 3: Ack B→ A
} Repeat

= 2 messages/3 slots

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