

Quiz 5 Solution

1. Explain the difference between the 802.11 CSMA/CA and p-persistent CSMA. For certain situations, we can make them work statistically the same. Explain when and how.

Sol) 802.11 CSMA/CA operates based on the random access operation, but p-persistent CSMA tries to transmit the frames in every slot with the probability p . Furthermore, 802.11 CSMA/CA has its unique operation such as post backoff or immediate access.

However 802.11 CSMA/CA and p-persistent CSMA work statistically the same in the environment below.

Condition) All the stations always have the packets to transmit. Therefore, post backoff and immediate access scheme is meaningless.

2. Explain what happens if a polled station does not have any frame to transmit in the PCF. Explain why it should behave like that.

Sol) The station notifies it to the AP (CF-null frame is transmitted). If the ACK is not delivered to the AP, AP cannot be sure that the previous poll packet is successfully delivered or not.

3. Give at least two reasons why the RTS/CTS exchange could be useful.

Sol)

- a. Mitigation of the hidden terminal problem
- b. Collision overhead is reduced when many stations exist in the cell. (because the size of RTS/CTS frame is generally smaller than the size of data frame)
- c. Collision overhead is reduced when the sizes of data frames are very large
- d. RTS/CTS can be utilized for the other purposes such as rate adaptation