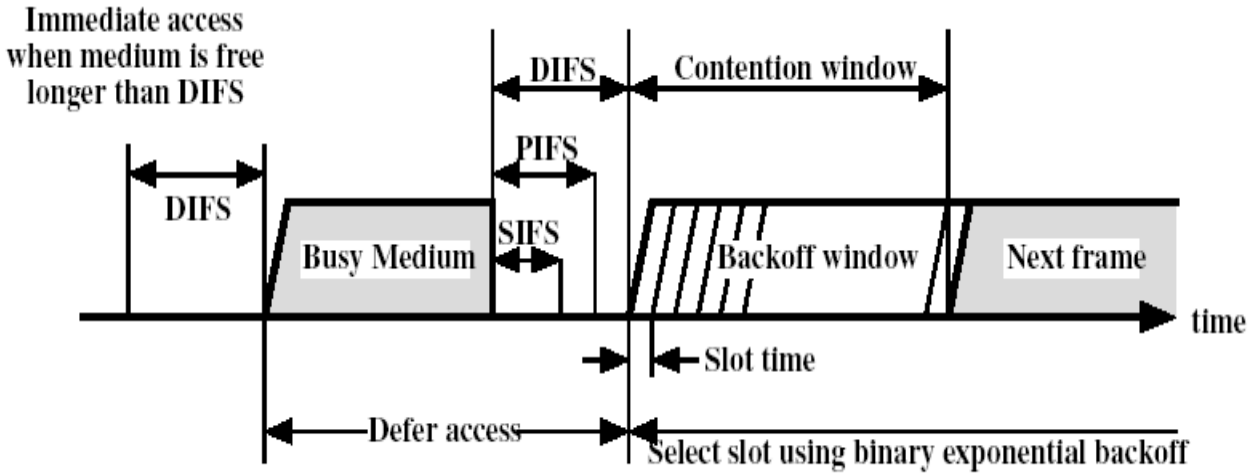
DCP 4513 Homework 3

1. What is “Transposition Ciphering”? What is “Substitution Ciphering”?
2. Briefly explain how public-key encryption algorithm works.
3. In IEEE 802.11, if the medium is busy, all stations will defer their transmission until the medium is free. Suppose there is one station waiting to transmit a DCF frame, and the other station is waiting to transmit a PCF frame. Do they have any chance to collide together when both of them find the medium is free? Justify your answer.
4. Comparing IEEE 802.3 CSMA/CD and IEEE 802.11 CSMA/CA, do they go to the backoff state under the same condition? That is, when does each of them perform the backoff procedure?
5. Explain the differences between the infrastructure and ad-hoc architectures in wireless LANs.
6. Based on the following figure, explain how Distributed Coordination Function (DCF) works.



7. What is “hidden terminal” problem in wireless networks? How does IEEE 802.11 prevent this problem?
8. Explain in what conditions does 802.11 CSMA/CA need to use Request to Send (RTS) and Clear to Send (CTS). Justify your answer.
9. What is Superframe in IEEE 802.11?