

## Data Communications

### Sample Questions

1. Assume the counter in a DPLL synchronizer shows 9 when a transition is detected. What does it mean and how should we make the necessary corrections?
2. Assume the transmitter clock rate is 2000Hz and the receiver clock rate is 10000 Hz. What is the max bit cell deviation percentage?
3. Character stuffing uses a special character to avoid processing the frame delimiter when it occurs in the frame data. What happens if this pattern happens in the data?
4. Assume two nodes in a communication network use 100111 and 010100 as key values for encoding their data in CDMA. Show that a third node with key 111000 will not receive the data sent by these nodes.
5. Find the CRC value for the following data. Assume the generating polynomial is  $x^4+x+1$
6. In a network with ARQ and window size of 10, 20% of messages are lost. What percentage of the messages will be duplicate messages if we use
  - a. Go-Back\_N
  - b. Selective repeat
7. Three hosts try to access the medium in a CSMA/CD network at the same time. Assuming the generated random numbers are different, explain what will happen in this network.
8. Explain how we can reach a data rate of 100Mbps using cat. 3 twisted pair cables with a bandwidth of 25MHz.
9. Which frame delimiters are used in PPP protocol? How the hosts are addressed?
10. How time synchronization is achieved in wireless networks?
11. How RTS and CTS messages are used to avoid collision?
12. What do we mean by transparent bridges?
13. Why should loops be prevented in a network which uses bridges?