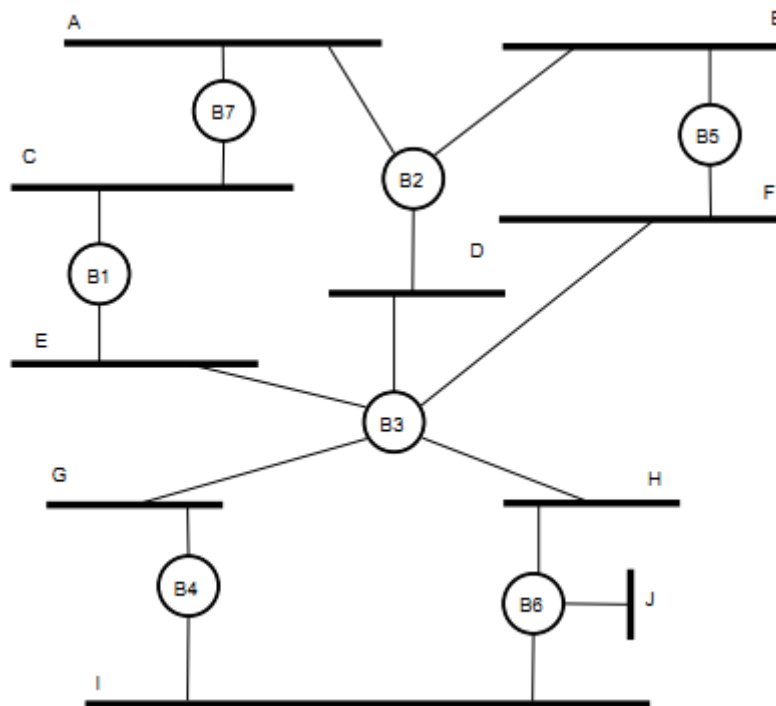

Advanced Computer Networks

Homework 1

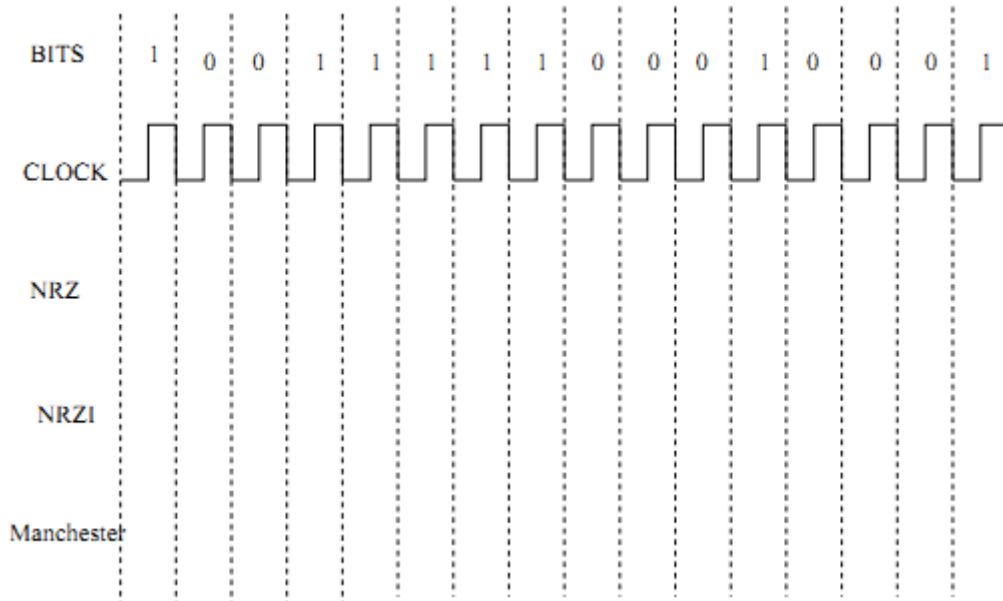
Assigned: March 15, 2013

Due: March 22, 2013

1. Given the extended LAN shown in the figure below, indicate which ports are not selected by the spanning tree algorithm. The LAN's in the figure are labeled A-J and the bridges in the figure are labeled B1-B7. Hub Bi has an ID of i which is used as the tie breaker. (q13 Chapter 3 Peterson and Davie)



2. Show the NRZ, Manchester, and NRZI encodings for the bit pattern shown in the figure below. Assume that the NRZI signal starts out low (Exercise 1, Chapter 2, Peterson and Davie).



Yuanfang, an ACN student, is given the task of building a new network link technology. Unfortunately, many of his beta-testers complain that their packets get corrupted when using his technology! He tracks the problem down to time synchronization problems between the sender and receiver on the link. Perhaps you can help Yuanfang solve his problems by telling him a little about different encoding methods. Identify the problem and give a 1-2 sentence explanation about why this occurs.

For each of these sub-parts, identify whether the encoding can have problems with:

- A. Long strings of 0s
 - B. Long strings of 1s
 - C. Both long strings of 1s or long strings of 0s
 - D. None of the above
- (a) Manchester encoding
- (b) NRZ
- (c) NRZI