CODING THEORY, MATH 567
PROBLEM SET 2
DUE: WEDNESDAY FEBRUARY 12

Note: During my absense February 3 - February 7, Calin Chindris will take over my class.

1. Do §2.2, Exercise 1 (warmup).
2. Do §2.2, Exercise 6.
3. Expain why for a binary Huffman code one always get equality in Kraft's inequality. (Look again at the proof of Kraft's inequality. Show also that given a binary Huffman code, any word has a codeword as prefix.)
4. Do §2.3, Exercise 2 (assume that we are looking for a binary code).
5. Do §3.1, Exercise 5. Also compute $I(X;Y)$.
6. Look at the definition of *lossless*, *deterministic*, *noiseless* and *useless* on page 77. Do §3.1, Exercise 9.
7. Do §3.2, Exercise 4.
8. (Bonus Problem) Consider the binary non-symmetric channel with channel probabilities $P(0|0) = P(1|0) = 1/2$, $P(0|1) = 0$ and $P(1|1) = 1$. What is the channel capacity?

Date: Winter 2003.