CODING THEORY, MATH 567
PROBLEM SET 1
DUE: FRIDAY JANUARY 31

1. a) Do §1.1, Exercise 2.
   b) Do §1.1, Exercise 8.
2. Do §1.1, Exercise 12.
3. Do §1.1, Exercise 18.
5. Do §1.2, Exercise 10. Note: If $X$ is a random variable with range
   \[ \{x_1, x_2, \ldots, x_n\} \]
   and
   \[ f : \{x_1, x_2, \ldots, x_n\} \to \{y_1, y_2, \ldots, y_m\} \]
   is a map, then $Y = f(X)$ is a random variable with range \(\{y_1, y_2, \ldots, y_m\}\) such that
   \[ P(Y = y_i) = \sum_{j, f(x_j) = y_i} P(X = x_j). \]
   for all $i$. (Whenever $X$ has outcome $x_j$, then $Y$ has outcome $f(x_j).$)
6. a) Do §2.1, Exercise 2.
   b) Do §2.1, Exercise 3.
7. a) Do §2.1, Exercise 8.
   b) Do §2.1, Exercise 9.
8. Do §2.1, Exercise 16.

Date: Winter 2003.