ESE 535 HW # 1 **Due February 3, 2000 at 3:50 pm**

A. From the textbook: Problems 2.1, 2.2, 2.3, 2.5, 2.6, 2.8, 2.10, 2.16, 2.18, 2.28

In problem 2.8, change "possible values of X are ..." to "some possible values of X are ..."

B. Given a probability distribution $(p_1, p_2, \ldots, p_n)$ and an integer m, where $0 \leq m < n$, define $q = 1 - \sum_{i=1}^{m} p_i$. Show that

$$H(p_1, p_2, \ldots, p_n) \leq H(p_1, p_2, \ldots, p_m, q) + q \log(n - m).$$

When does equality hold ?