MATH 5140/6140

– Data Compression – Prob. Set 3.

$S = \{a, b, c, d\}$, $f_a = .4$, $f_b = .35$, $f_c = .15$, $f_d = .1$.

(40) 1. Encode bbbb, abcd, dcba, and badd by the method of section 6.1, assuming that the decoder will be given the source word length (which will be four, in each case).

(40) 2. Decode 11, 010001, 10101, and 0101, assuming the source word lengths are all 4.

(30) 3. Suppose the encoder is to communicate the source word length to the decoder by adding zeroes after the last 1 in the code word, as discussed in Exercise 6.1.2.

(a) Decide which of the source words in problem 1 will have different code representatives, with this new arrangement, and give those new code representatives.

(b) Decode 011000