

- A. From the textbook: Problems 5.1, 5.3, 5.4, 5.8, 5.12, 5.14
- B. For each of the following codes, either prove unique decodability or give an ambiguous concatenated sequence of codewords:
- (a)  $\{0, 1, 11\}$ .
  - (b)  $\{0, 10, 11\}$ .
  - (c)  $\{0, 01, 11\}$ .
  - (d)  $\{0, 01, 10\}$ .
  - (e)  $\{0, 01\}$ .
  - (f)  $\{00, 01, 10, 11\}$ .
- C. Consider the binary symmetric Markov source described in HW # 2. If  $p = 0.8$ , design first-, second-, and third-order binary Huffman codes for this source. Determine in each case the average lengths per source sample (or average code rates) and compare them to the entropy rate.