ECE 465—Spring 2002, Instructor: Prof. Shantanu Dutt

Homework 2: Due Thurs. Feb. 20

1. Prob. 3.14 from text (Nelson, et al.) 40
2. Prob. 3.15 80
3. Prob. 3.58 with the requirement that the least-cost set of PIs to cover the minterms should be chosen using Petrick’s algorithm and not the PI table—the set of all PIs, however, are to be determined using the QM method. 40
4. Prob. 3.60 40
5. Prob. 3.63 80
6. (a) Devise a method, similar to the QM technique, for directly obtaining a minimal POS expression of a function that may have don’t cares. Write down the steps of your method clearly along with reduction rules and heuristics for obtaining the least-cost solution. 40
   (b) Using the steps of your method given for part (a), obtain a minimal POS expression for the following functions.

   (i) \( f(A, B, C, D) = \prod M(0, 1, 5, 7, 9, 11, 12, 14) \) 25
   (ii) \( f(A, B, C, D, E) = \prod M(0, 5, 6, 9, 21, 28, 31) \cdot D(2, 12, 13, 14, 15, 25, 26) \) 35