First Name:_____ Last Name: _____

1. Find he complement of F = XY+Z'. Then show that FF' = 0 and F+F' =1

2. For function F = XY + XY' + Y'Z
   a. Truth table
   b. Sum of min terms
   c. Product of max terms
   d. Standard sum of products
   e. Standard product of sums
   f. Minimum sum of products
   g. Minimum products of sums
   h. Gate implementation using all NAND gates
   i. Gate implementation using all NOR gates.

3.
   a. Using AND and OR gates, draw the logic diagrams for the following
      Boolean expressions without expanding or simplifying them.
      i.   Y = (A'+B')C + B(A+C)
      ii. (A+B')(C+D')
   b. Convert the above circuits to all NAND and all NOR gates without
      expanding or simplifying the functions.

4. For the following Boolean expression F = X'Y' + Y'Z + XZ + XY + YZ',
   determine
   a. Truth table
   b. Sum of min terms
   c. Product of max terms
   d. Standard sum of products
   e. Standard product of sums
   f. Minimum sum of products
   g. Minimum products of sums
   h. Gate implementation using all NAND gates
   i. Gate implementation using all NOR gates.