Faculty of Engineering & Technology – Electrical & Computer Engineering
Department
Digital Systems ENCS234 – **HW#3**

1. Simplify the following Boolean Functions, using k-map method:
   a. $F(x,y,z) = \Sigma\ (0,2,6,7)$

   b. $F(x,y,z) = \Sigma\ (3,5,6,7)$

   c. $F(A,B,C,D) = \Sigma\ (3,7,11,13,14,15)$

   d. $F(A,B,C,D) = \Sigma(1,3,5,7,9,15) + \Sigma d(4,6,12,13)$

   e. $F(A,B,C,D) = \prod(1,3,5,7,9,11,13,15)$

2. Simplify the following expressions in (1) sum of products and (2) products of sums:

     a. $x'z' + y'z' + yz' + xy$

     b. $AC' + B'D + A'CD + ABCD$

3. Implement the function F (A, B, C, D) $=\Sigma$ (0, 1, 2, 3, 4, 8, 9, 12) with the following two-level forms:

     a. AND-OR
     b. NAND-NAND
     c. OR-AND
     d. NOR-OR.

4. In the following function determine the Essential prime implicant
   a. $F(A,B,C,D) = \Sigma\ (0,2,5,7,6,8.9,10,11,13,14,15)$

Q5: Explain the concept of odd parity generator?