Tutorial – 5

Q1. Express the Boolean function $F = AB + \bar{A}C$ in a product of maxterm form.

Q2. Find a product of maxterms expression for $F(x, y, z) = \Sigma\,(1, 2, 3, 5, 7)$.

Q3. Compute the sum of minterms expression for $F(x, y, z) = \Pi\,(1, 3, 4, 6)$.

Q4. Express the following function in the POS form:
$$F(A, B, C, D) = \bar{B}D + \bar{A}D + BD$$

Q5. Represent the following function in the SOP form:

$$F(x, y, z) = (xy + z)(xz + y)$$

Q6. Minimize the following expression using mapping and implement using universal logic:

$$F = \Sigma\,(0, 2, 4, 6, 7, 8, 10, 12, 13, 15)$$

Q7. Minimize the following expression using mapping and implement using universal logic:

$$F = \Sigma\,(0, 1, 2, 3, 5, 7, 8, 9, 10, 12, 13)$$

Q8. Determine the prime implicants for the following Boolean function:

$$F(w, x, y, z) = \Sigma\,(0, 2, 4, 5, 6, 7, 8, 10, 13, 14, 15)$$

Q9. Obtain the simplified expression of the following in the POS form:

$$F(A, B, C, D) = \Sigma\,(0, 1, 2, 3, 4, 5) + d(10, 11, 12, 13, 14, 15)$$

Q10. Construct the minimized form of the following expression using K-Map:

$$F(A, B, C, D) = \Sigma\,(4, 5, 7, 12, 14, 15) + d(3, 8, 10)$$