

Q1. Draw the Truth Tables for the following expressions:

- i.  $A' B' C' + (A + B) + AB$
- ii.  $A B C + A (B + C)$
- iii.  $A B' C + AB (B + C)$
- iv.  $A + (A B + C)'$

Q2. Simplify using the laws of Boolean Algebra:

- i.  $A B' + A' B C' + (A C') + B C$
- ii.  $A B + A' C + B C$
- iii.  $A . [ B + C ( A . B + A . C' ) ]$

Q3. Express the following Cardinal expressions into Canonical form:

- i.  $F(a, b, c, d) = \Sigma (0, 1, 2, 3, 12, 13, 14, 15)$
- ii.  $F(U, V, W, Z) = \Pi (1, 2, 3, 12, 13, 14, 15)$

Q4. Convert  $(X' + Y + Z') . (X + Y' + Z) . (X + Y + Z') . (X + Y + Z)$  into SOP form.

Q5. Simplify the following expression and convert it into its Canonical POS form

$$(X . Y + Z) (Y + Z' . X)$$

Q6. Verify that:  $(Z + X) (Z + X' + Y) = (Z + X) (Z + Y)$

Q7. Convert the following function into its canonical SOP form:  $F(x, y, z) = \Sigma (0, 1, 5, 7)$

Q8. Prove that  $F(A, B, C) = \Pi (2, 3, 4, 7) = \Sigma (0, 1, 5, 6)$

[ **Hint:** Use Truth Table to justify ]