Q10

1) $F = \Sigma_{Y,Z,X}(3,2,6)$

The canonical SOP: $F = m_3 + m_2 + m_6 = Y'ZX + Y'ZX' + YZX'$

The canonical POS $F = \Pi M(0,1,4,5,7)$

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

2) $G(A,B,C) = \Pi M(0,3,5,6,7)$

The canonical SOP: $G = \Sigma m(1,2,4) = A'B'C + A'BC' + AB'C'$

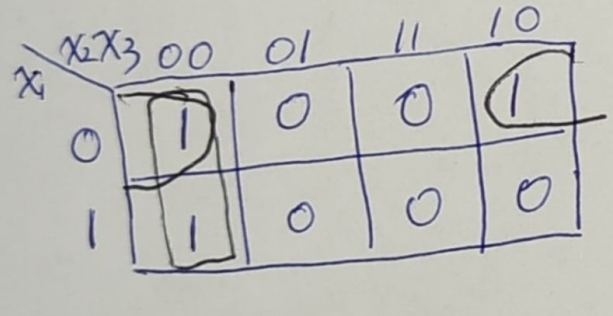
The canonical POS: $F = (A+B+C)(A+B'+C')(A'+B+C')(A'+B'+C)(A'+B'+C')$

Q14 $y(x_1, x_2, x_3) = \Sigma m(0,3,4,7)$

$= \underline{x_1'x_2'x_3'} + \underline{x_1'x_2x_3} + \underline{x_1x_2'x_3'} + \underline{x_1x_2x_3}$

$= x_2'x_3' + x_2x_3$

Q15



$y = x_2'x_3' + x_1'x_3'$

Q16 If we choose x_1x_2 as the selection signals, the 4 inputs could be the functions of x_3

Discassion: If $x_1 = 0$ $x_2 = 0$, then $y = x_3'$

If $x_1 = 0$ $x_2 = 1$, $y = x_3'$

If $x_1 = 1$ $x_2 = 0$ $y = x_3'$

If $x_1 = 1$ $x_2 = 1$ $y = 0$

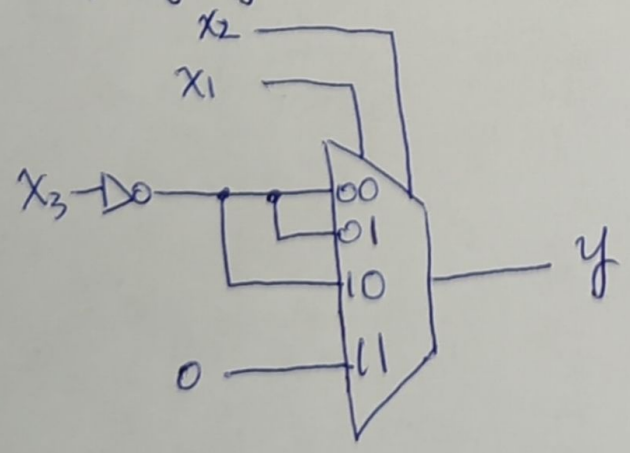
Let's simplify y alittle bit: $y = Im(0,2,4) = \underline{x_1'x_2'x_3'} + x_1'x_2x_3' + \underline{x_1x_2'x_3'}$

$= x_2'x_3' + x_1'x_2x_3'$

$= (x_2' + x_1'x_2)x_3'$

$= (x_1' + x_2')x_3'$

$= x_1'x_3' + x_2'x_3'$



Q7 (a) $ab + bc = ab'(c+c')$

LHS $= ab + bc$

RHS $= ab'$

LHS $\neq$ RHS as when $a=b=1$ LHS $= 1$, RHS $= 0$

(b) $abc + ab'c + a'c = ac + a'c = c$ = LHS

$ab'c + ab'c' + abc = ac + ab'c' = a(b'c'+c) = a(c+b')$ = RHS

LHS $\neq$ RHS