Name Answer

CE-1901 – Dr. Durant – Quiz 3
Fall 2015, Week 3

1. (2 points) **Draw** a **truth table** for function that outputs 1 iff the 3-bit signed input, abc, equals -2, -1, 0, or 1.

(2) CW PRINTOUT FIX: -8th row --1

	a_2	a_1	a_0	r
0	0	0	0	1
1	0	0	1	1
2	0	1	0	0
3	0	1	1	0
-4	1	0	0	0
-3	1	0	1	0
-2	1	1	0	1
-1	1	1	1	1

2. (1 point) Write the canonical sum-of-products (SOP) equation for your truth table.

$r = \bar{a}_2\bar{a}_1\bar{a}_0 + \bar{a}_2\bar{a}_1 a_0 + a_2\bar{a}_1\bar{a}_0 + a_2 a_1 a_0$

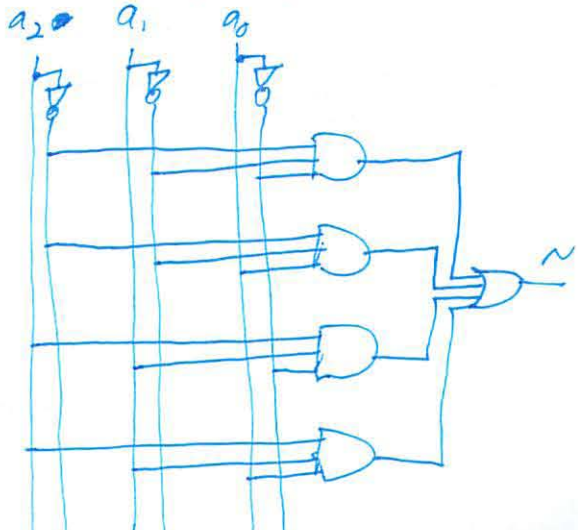
(-1/1) Or instead of r selected

3. (1 point) Write the canonical SOP equation in sum-of-minterms (Σ) form.

$r(a_2 a_1 a_0) = \Sigma(m_0, m_1, m_6, m_7) = m_0 + m_1 + m_6 + m_7 = \sum_m(0,1,6,7)$

(-1/4) any 1 of these is correct

4. (1 point) Draw the gate diagram for your canonical SOP equation.



5. (1 point) Write the canonical product-of-sums (POS) equation for your truth table.

$N = (a_2 + \bar{a}_1 + a_0)(a_2 + \bar{a}_1 + \bar{a}_0)(\bar{a}_2 + a_1 + a_0)(\bar{a}_2 + a_1 + \bar{a}_0)$

Nots go where 1s are $M_5 = 101$

(-½) lowercase Cs

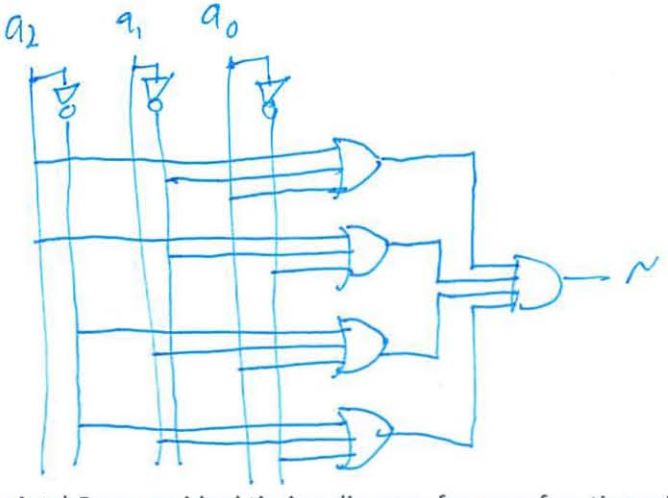
6. (1 point) Write the canonical POS equation in product-of-maxterms (Π) form.

$N(a_2 a_1 a_0) = \Pi(M_2, M_3, M_4, M_5)$ | correct, only need 1

$= \Pi_M(2, 3, 4, 5)$

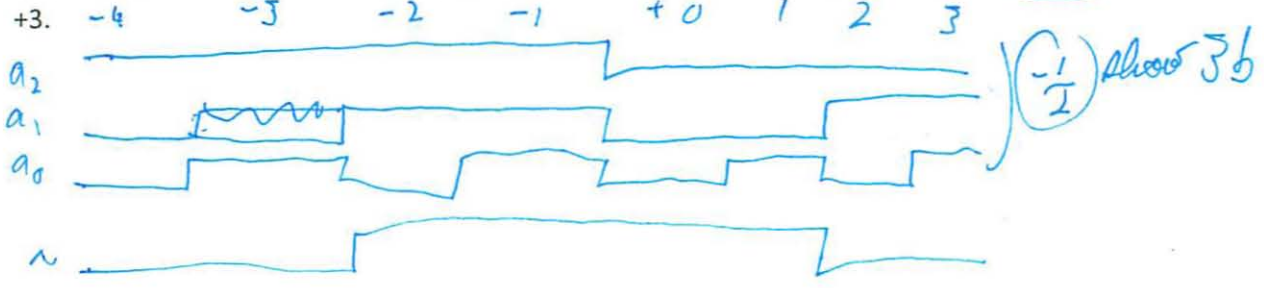
$= M_2 M_3 M_4 M_5$ ← yes, but not in Π form

7. (1 point) Draw the gate diagram for your canonical POS equation.



8. (2 points) Draw an ideal timing diagram for your function with the input progressing from -4 to +3.

(-¼)



(-½) almost 3b