CprE 281 QUIZ 2

ELECTRICAL AND COMPUTER ENGINEERING
IOWA STATE UNIVERSITY

Initial Stuff and Basics
Assigned Date: Third Week
Finish by Friday
Total Points: 40

Instructions

Complete the question below to the best of your ability. Once complete, upload a PDF of your work to canvas.

Questions

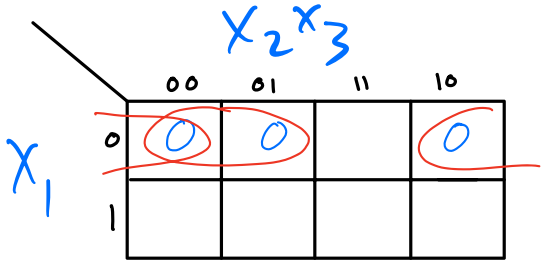
P1. (20 points) Implement the function f(x1, x2, x3) = Π M(0, 1, 2) using only NOR gates. [Consider minimal cost implementation]

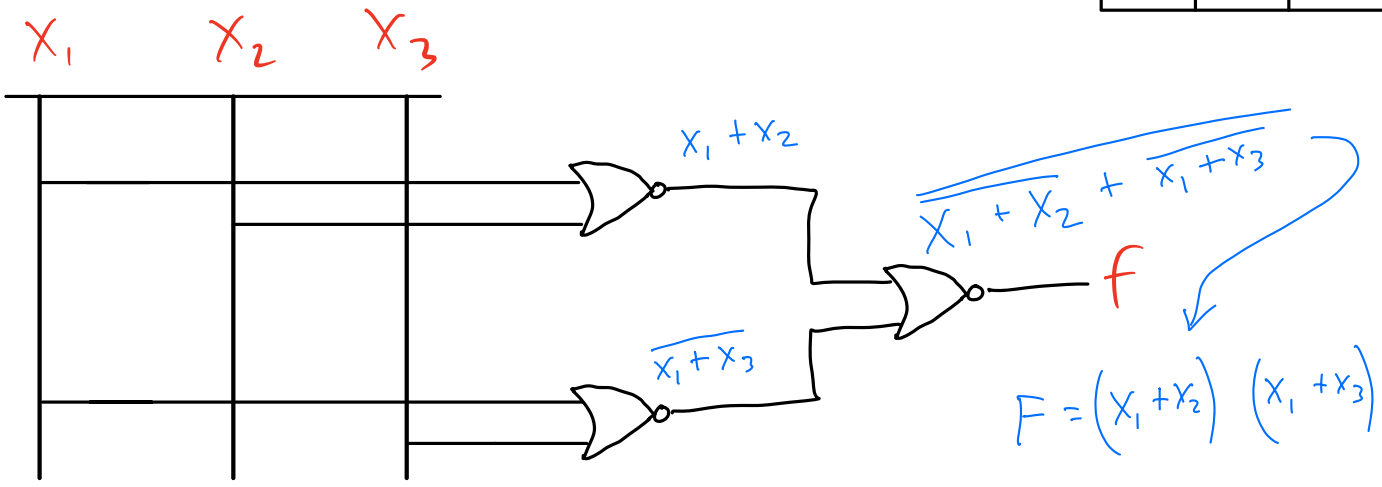
P2. (20 points) Implement the function f(x1, x2, x3) = Π M(0, 1, 5, 6, 7) using only NAND gates. [Consider minimal cost implementation]

P1

$f(x_1, x_2, x_3) = \prod M(0,1,2)$ using NOR

$f = (\bar{x} + x_2)(\bar{x}_1 + \bar{x}_3)$



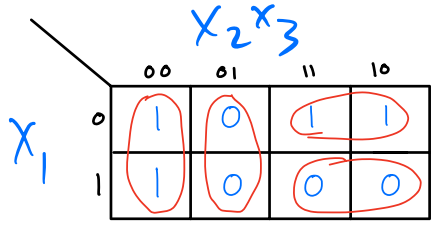


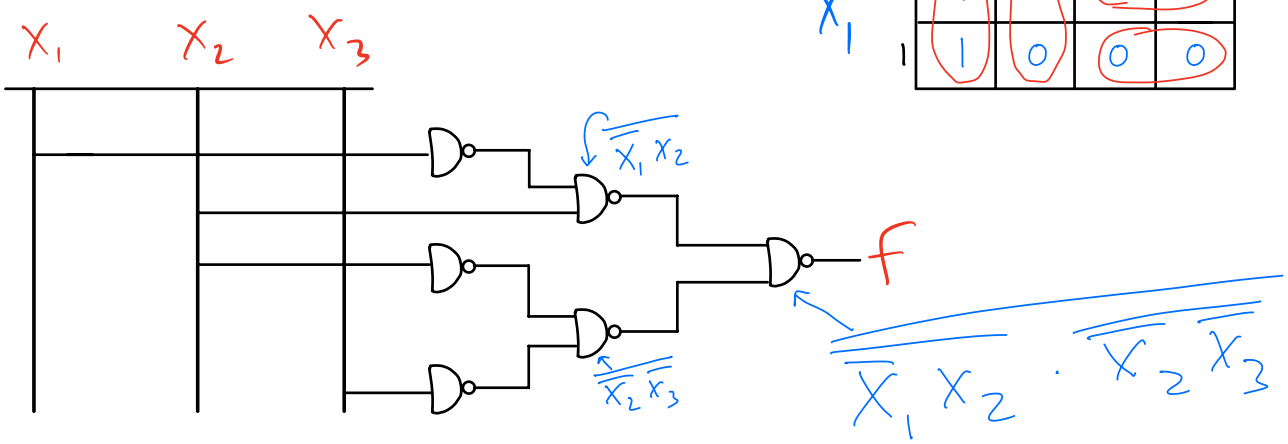
$f = (x_1 + x_2)(x_1 + x_3)$

P2 $f(x_1, x_2, x_3) = \prod M(0, 1, 5, 6, 7)$ using NAND

$$f = (\overline{x_1} + \overline{x_2})(x_2 + \overline{x_3})$$

$$f = \overline{x_1} x_2 + \overline{x_2}\,\overline{x_3}$$





$$\overline{\overline{x_1}\,x_2} + \overline{\overline{x_2}\,\overline{x_3}}$$

$$f = \overline{x_1}\,x_2 + \overline{x_2}\,\overline{x_3}$$