TOTAL: _____/10

ECE 543: Introduction to Digital Systems

Homework #2

Due: Friday, September 24th, 2021 (6 P.M.)

Student Name: _____

Note:
- **Please use this sheet as a cover page.**
- **Your work must be hand-written (no typing please).**
- **Homework must be submitted electronically through Canvas in a PDF format.**

Do the following problems from "Fundamentals of Digital Logic with Verilog Design" by Brown & Vranesic (3rd Edition)

Solve the following problems:

Problems from Chapter 2:
2.37, 2.54, 2.55

2.37

x_1	x_2	x_3	F	
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	1	1
1	0	0	0	1
1	0	1	1	0
1	1	0	0	1
1	1	1	0	1

$\bar{x}_1\bar{x}_2x_3 + \bar{x}_1x_2\bar{x}_3 + \bar{x}_1x_2x_3 + x_1\bar{x}_2x_3$

~~$\bar{x}_1x_3 + x_1x_2\bar{x}_3 + x_1\bar{x}_2x_3$~~

$\bar{x}_2x_3 + \bar{x}_1x_2$ SOP

$\bar{x}_1\bar{x}_2\bar{x}_3 + x_1\bar{x}_2\bar{x}_3 + x_1x_2\bar{x}_3 + x_1x_2x_3$

$\bar{x}_2\bar{x}_3 + x_1x_2$

$\bar{x}_2\bar{x}_3 + x_1x_2$

POS $(x_2 + x_3)(\bar{x}_1 + \bar{x}_2)$

2.54

	x_2x_3	$x_2\bar{x}_3$	$\bar{x}_2x_3$	$\bar{x}_2\bar{x}_3$
$\bar{x}_1$	1	0	0	0
x_1	1	1	0	1

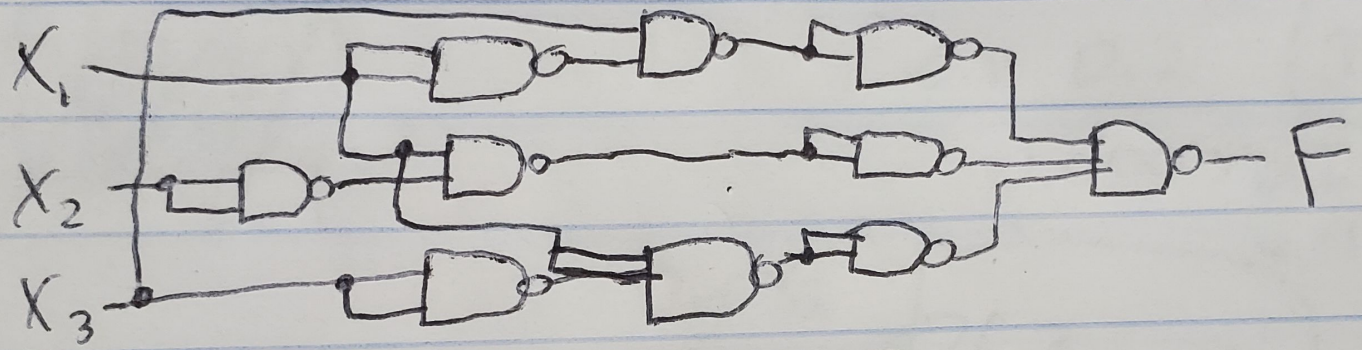
	x_1x_3	$x_1\bar{x}_3$	$\bar{x}_1x_3$	$\bar{x}_1\bar{x}_3$
$\bar{x}_2$	0	1	0	0
x_2	1	1	1	0

	x_1x_2	$x_1\bar{x}_2$	$\bar{x}_1x_2$	$\bar{x}_1\bar{x}_2$
$\bar{x}_3$	1	1	0	0
x_3	1	0	1	0

$\Sigma m(3,4,6,7)$

$\bar{x}_1x_2x_3 + x_1\bar{x}_2\bar{x}_3 + x_1x_2\bar{x}_3 + x_1x_2x_3$

$x_2x_3 + x_1\bar{x}_3$



$\bar{X}_1 X_3 + X_1 X_2 + X_1 \bar{X}_3$