Exam1 Review Chapter2

1. Show a truth table for the following functions:

a. $F = AB + BC$

ABC	AB	BC	F
000	0	0	0
001	0	0	0
010	0	0	0
011	0	1	1
100	0	0	0
101	0	0	0
110	1	0	1
111	1	1	1

b. $G = A'B + (A + B)(B + C)$

ABC	A'B	A+ B	B + C	G
000	0	0	0	0
001	0	0	1	0
010	1	1	1	1
011	1	1	1	1
100	0	1	0	0
101	0	1	1	1
110	0	1	1	1
111	0	1	1	1

2. (10 points) Write the Boolean equations for f1 and f2 and draw the logic diagram of the circuit whose outputs are defined by the following truth table: Specify the number of gates and inputs (e.g. 2-input AND) for both functions.

Functions of Three Variables

x	y	z	Function f_1	Function f_2
0	0	0	0	0
0	0	1	1	0
0	1	0	0	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

$$f1 = x'y'z + xy'z' + xyz$$

Number of gates with inputs:

F1:   3---3 input AND gates
       1---3 input OR gates
       3 inverters

$$f2 = x'yz + xy'z + xyz' + xyz$$

F2:   4---3 input AND gates
            1---4 input OR gate
            3 inverters