Assignment # 10.1 Sample Key

1. Recast the decision problem for the Boolean expression (a + b) (a + ~b + c) (~b) as a SubsetSum problem using the construction discussed in class.

	a	b	c	a + b + b	a +~ b + c	~b + ~b + ~b
a	1	0	0	1	1	0
~a	1	0	0	0	0	0
b	0	1	0	2	0	0
~b	0	1	0	0	1	3
c	0	0	1	0	1	0
~c	0	0	1	0	0	0
C1	0	0	0	1	0	0
C1’	0	0	0	1	0	0
C2	0	0	0	0	1	0
C2’	0	0	0	0	1	0
C3	0	0	0	0	0	1
C3’	0	0	0	0	0	1
	1	1	1	3	3	3

Assignment # 10.2 Sample Key

2. **Recast the SubsetSum problem (8, 7, 6, 4, 6, 8, 2, 7, 2), G=19 as a Partition Problem using the construction discussed in class.**

(8, 7, 6, 4, 6, 8, 2, 7, 2, 81, 69)

Can partition as (8,7,4, 81) = 100; (6,6,8,2,7,2,69) = 100

Assignment # 10.3 Sample Key

3. **Recast the decision problem for the Boolean expression (a + b) (a + ~b + c) (~b) as an Integer Linear Programming problem using the construction discussed in class.**

0≤a≤1; 0≤b≤1; 0≤c≤1;

a + b ≥ 1

a + (1-b) + c ≥ 1

(1-b) ≥ 1

Solution: a = 1; b = 0; c = 1 (or 0)