Student Id: S2015449

Answer To The Question No – 2 (a) (i)

Adding slack and artificial variables

$$-2x_1+5x_2-3x_3+x_4+S_1=10$$
$$5x_1+2x_3+A_1=30$$

$$x_1,x_2,x_3,x_4,S_1,A_1\geq 0$$

The Augmented Matrix

X1	X2	X3	X4	S1	A1		
-2	5	-3	1	1	0	10	
5	0	2	0	0	1	30	
5	-12	-10	3	0	0	0	

Answer To The Question No – 2 (a) (ii)

The initial basic feasible solution

X1	X2	X3	X4	S1	A1		
-2	5	-3	1	1	0	10	
5	0	2	0	0	1	30	
5	-12	-10	3	0	0	0	

Here, X1 = X2 = X3 = X4 = 0, S1= 10, A1 = 30

And the f(x) = 0

Answer To The Question No – 2 (a) (iii)

X1	X2	X3	X4	S1	A1		
-2	5	-3	1	1	0	10	10/5= 2
5	0	2	0	0	1	30	30/0= Undefined
5	-12	-10	3	0	0	0	

5 will be the pivot

Student Id: S2015449

R1 -> R1 * 1/5

R2 -> R2

R3 -> R1*12 + R3

X1	X2	X3	X4	S1	A1		
-2/5	1	-3/5	1/5	1/5	0	2	
5	0	2	0	0	1	30	
1	0	-86				2/5	

Answer To The Question No – 2 (b)

```
%Student Id S2015449


C = [5,-12,-10,3]; #Co-efficinets of the Objective Function
A = [-2 5 -3 1; 5 0 2 0]; #Co-efficinets of the Constraints
b = [10,30]; #Column Array of the Constraints
lb = [];
ub = [];
cType = "US"; #Constraints Type
varType = "IIII";
sense = -1; #Maximization

#Execute Function
[xmax,fmax,status,extra] = glpk(C,A,b,lb,ub,cType,varType,sense);
```