Assignment 1(a)

Name: [illegible]

Class: [illegible]

Roll No: 10

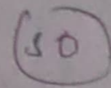
Subject: [illegible]

DOP DOA Remarks Sign

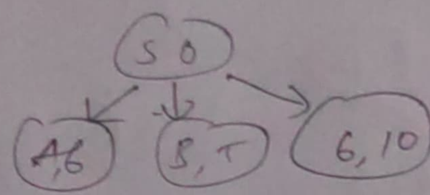
Q1]

1.I]

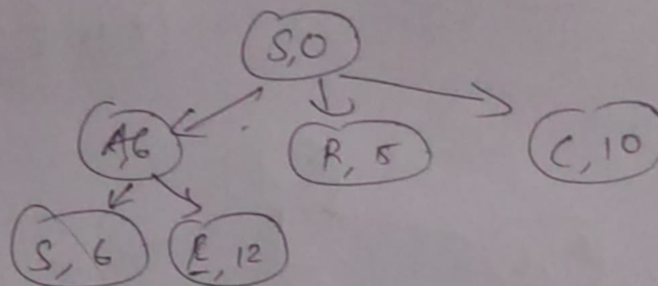
→ step 0:



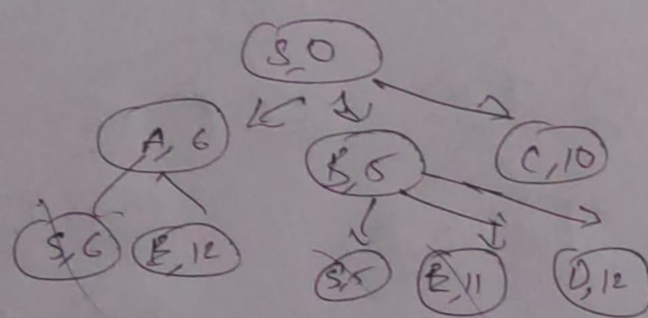
step 1:



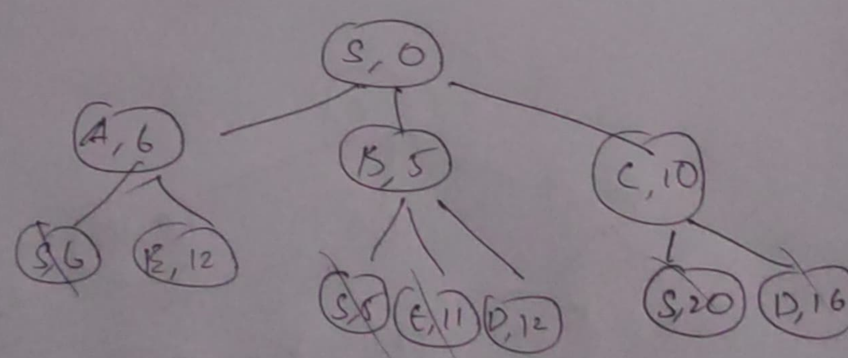
step 2:



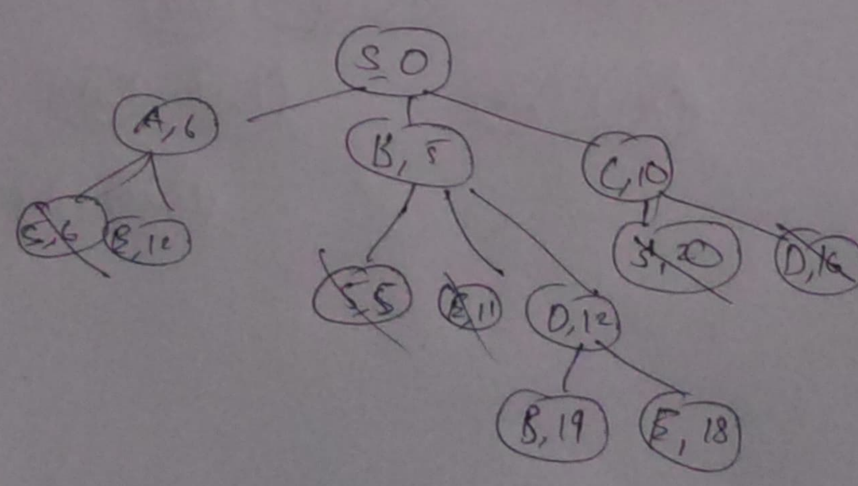
step 3:



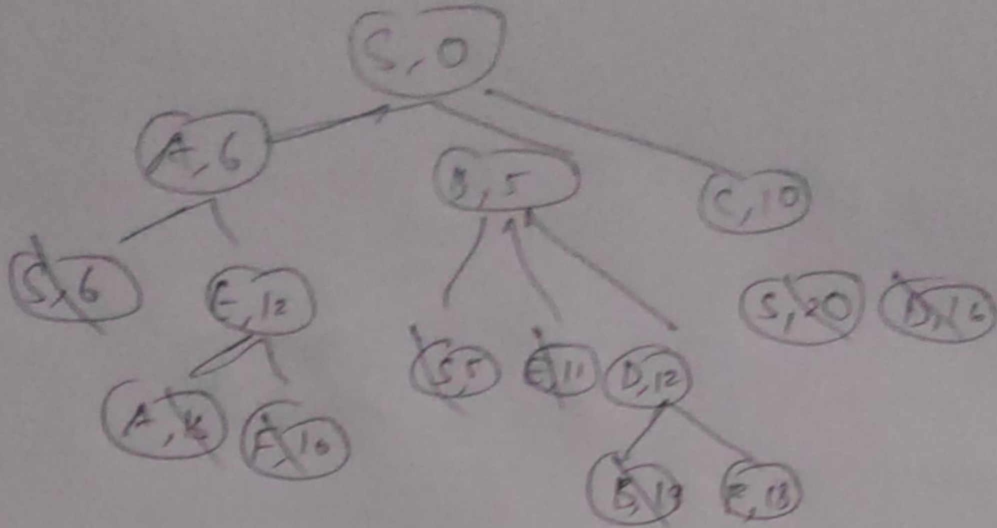
step 4:



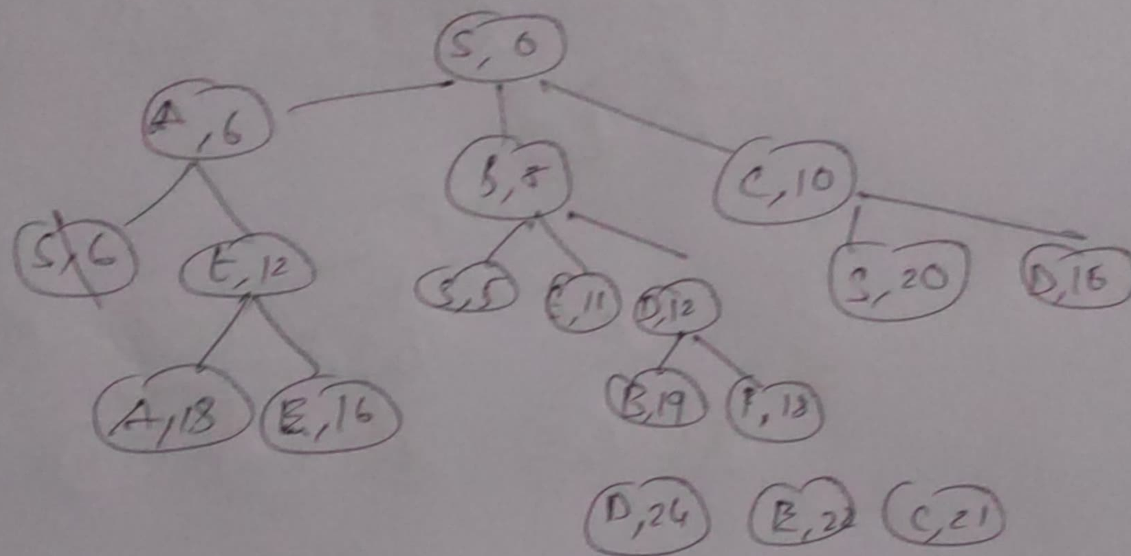
step 5:



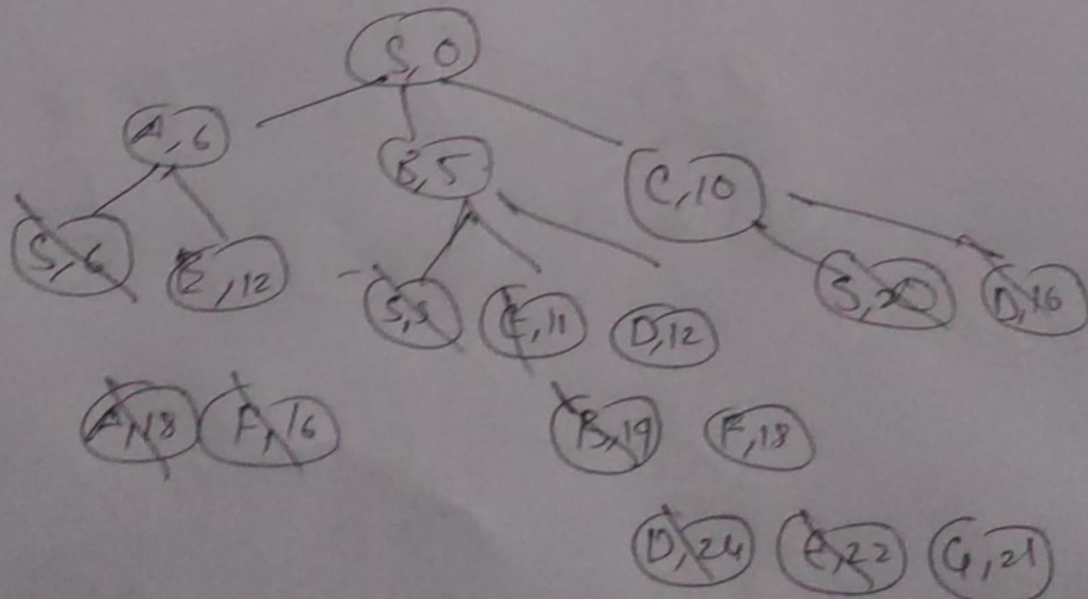
Step 6:



Step 7:



Step 8:



1.4]

→ Initializatn: compute f sure for S & put it in the openlist

F-score S: $f(S) = h(S) = 17$

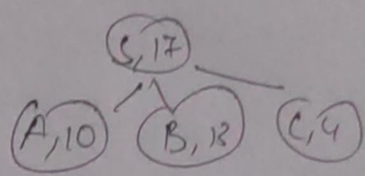
Step 1:

F - score of successor

$F(A) = h(A) = 10$

$F(B) = h(B) = 13$

$F(C) = h(C) = 4$

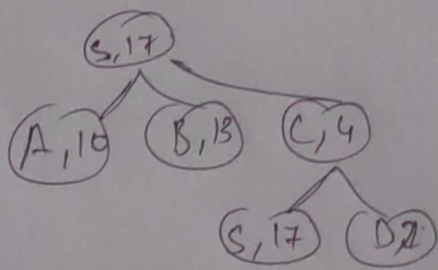


Step 2:

F - Sure of successors

$f(S) = h(S) = 17$

$f(D) = h(D) = 2$



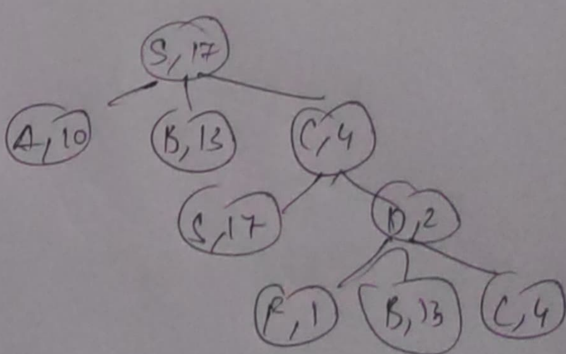
Step 3:

F - sure of successor

$f(C) = h(C) = 4$

$f(B) = h(B) = 13$

$f(F) = h(F) = 1$



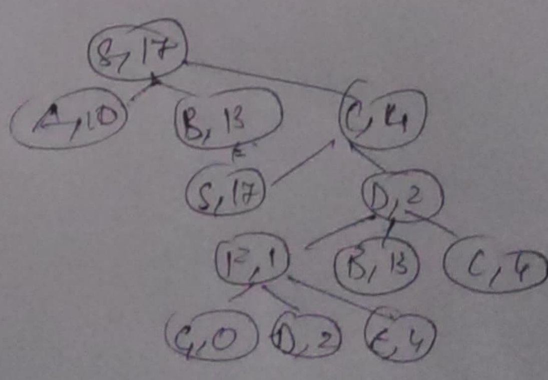
Step 4:

F- sure of successor

$f(D) = h(D) = 2$

$f(E) = h(E) = 4$

$f(G) = h(G) = 0.$



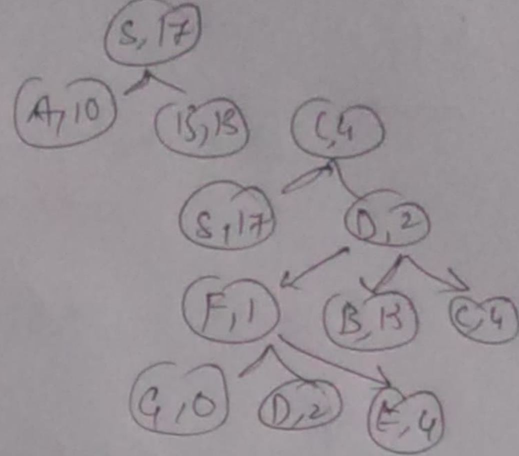
Step 5 :

soln is :-

S -> C -> D -> F -> G with

soln cost : 10 + 6 + 6 + 3

= 25



Q 2)

a)

→ The lowest path cost G(n) can be the cost to reach the goal configuration in least steps.

For our case, we can reach the final configuration in at last 4 moves. UP, UP, LEFT, LEFT. Since all moves are equally costly we compute G(n) as,

$$G(n) = 1+1+1+1$$

$$G(n) = 4$$

Consider the following 8 puzzle instance.

8	7	6
2	1	5
-	3	4

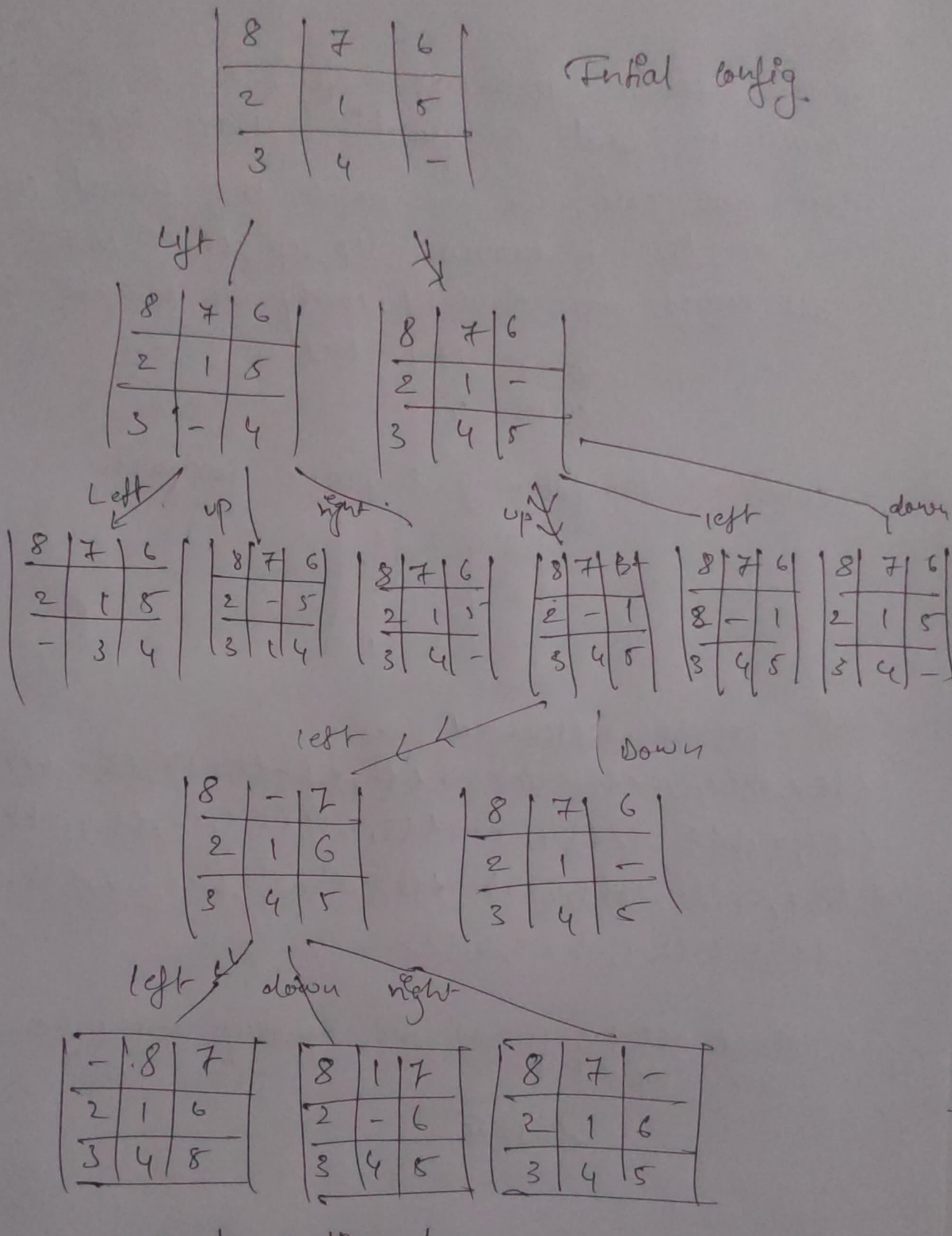
Sol^n can be represented as:

<<8,7,6><2,1,5><-,3,4>> → <<8,7,6><2,1,5>,<3,-,4>> →
<<8,7,6><2,1,5><3,4,->> → <<8,7,6><2,1,->,<3,4,5>> →
<<8,7,-><2,1,5><3,4,5>> → <<8,-,7><2,1,6><3,4,5>> →
<<-,8,7>,<2,1,6><3,4,5>>

Since all the moves are equally costly the cost would be.

$$G(n) = 6$$

c].
→



final configural.

c)
→ For $i=1$, n = initial state
$h1$(initial) = Misplaced tiles count except space
h_2 (initial) = 4.

n = Goal state
$h1$ (Goal) = 0

For $i=2$, n = initial state
$h1$ (initial) = currently explored tiles went except space
h_2 (initial) = 4.

n = Goal state
h_2(Goal) = 0.

For $i=2$, n = initial state
h_2 (initial) = Currelty Explored tiles count except space
h_2 (initial) = 4
For n = Goal state
h_2(Goal) = 8

For $i=3$, n = initial state
h_3(initial) = sum of manhattan dist between current & correct posn of all tiles except space
h_3 (initial) = 0+0+0+0+1+1+1+1

For n = Goal state
h_3(goal) = 0.