Name :- Harikrishna B. Padhy

Class :- B.E - I T

Roll no :- 46

Subject :- IS lab

DoP	DoA	Remark	Sign

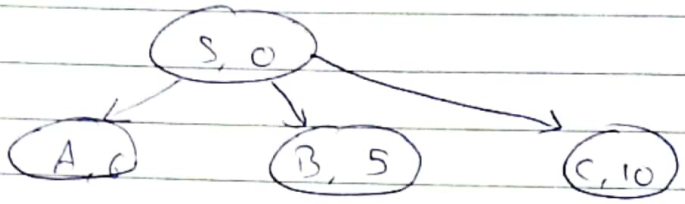
Assignment - 1 (A)

Q.1

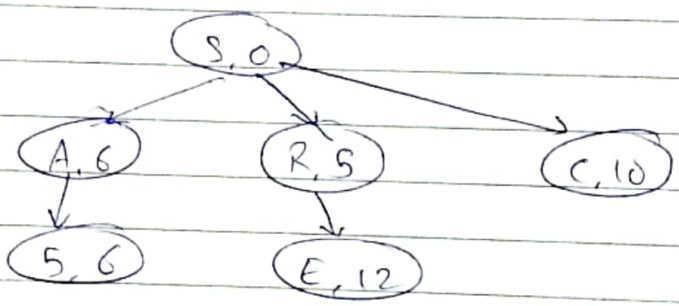
1.1

Step 0 =

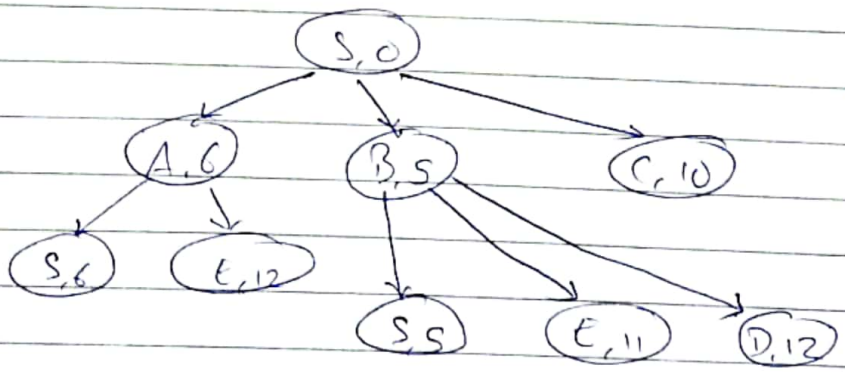
step 1 =



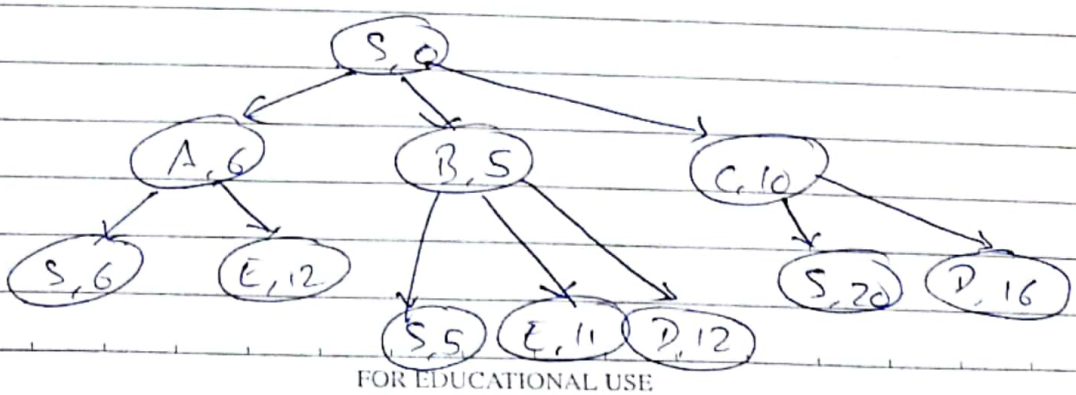
step 2



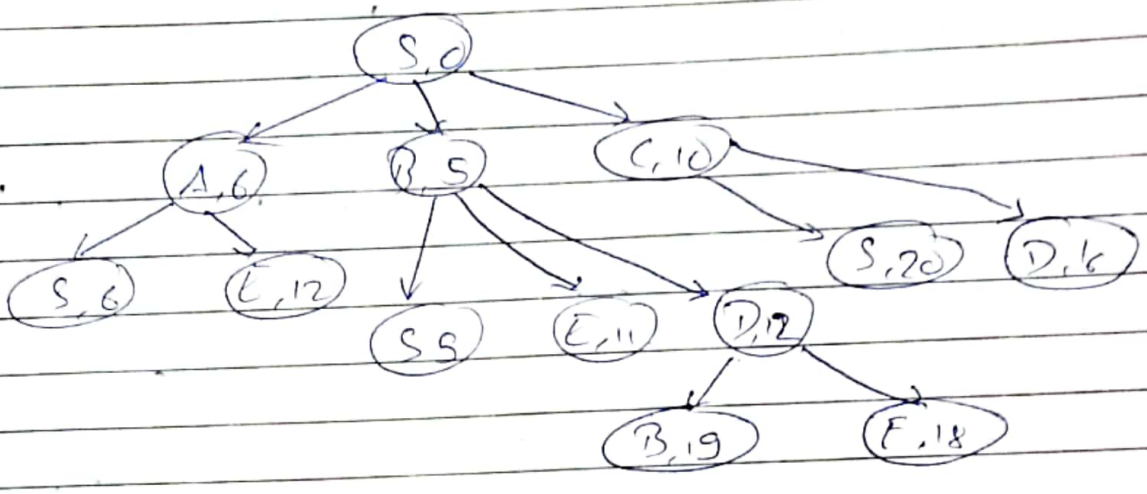
step 3 :



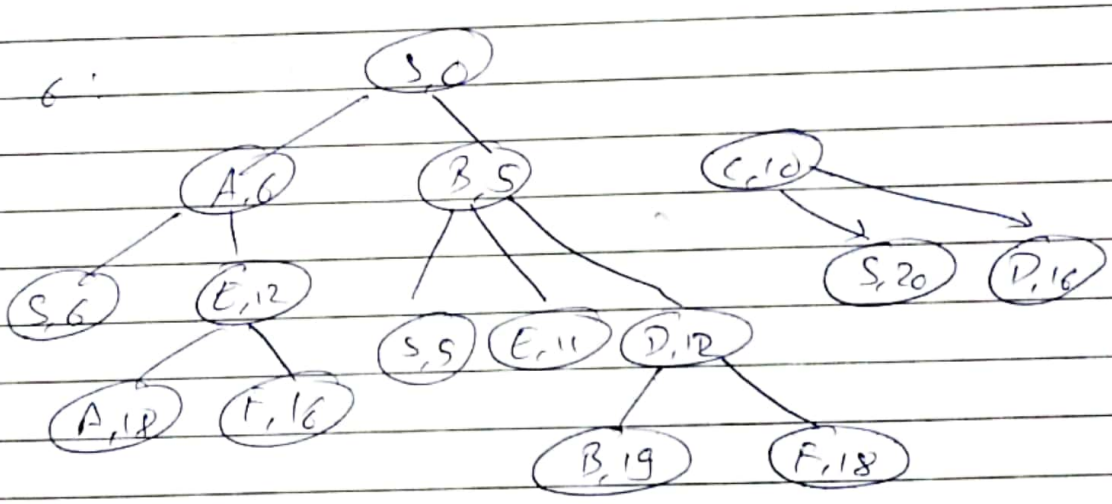
step 4



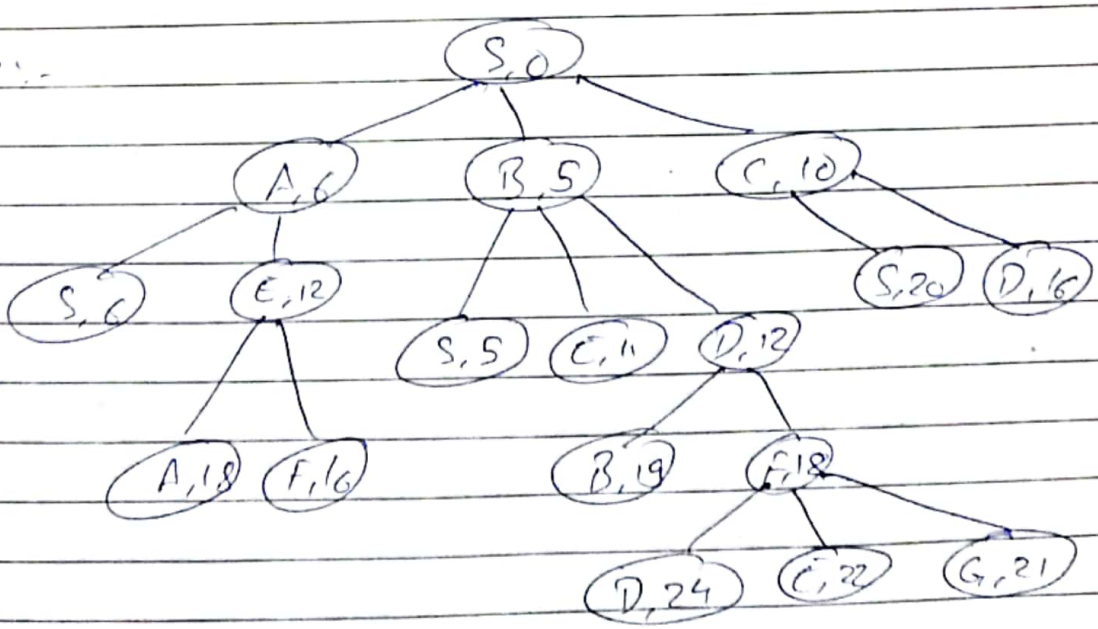
step 5 :



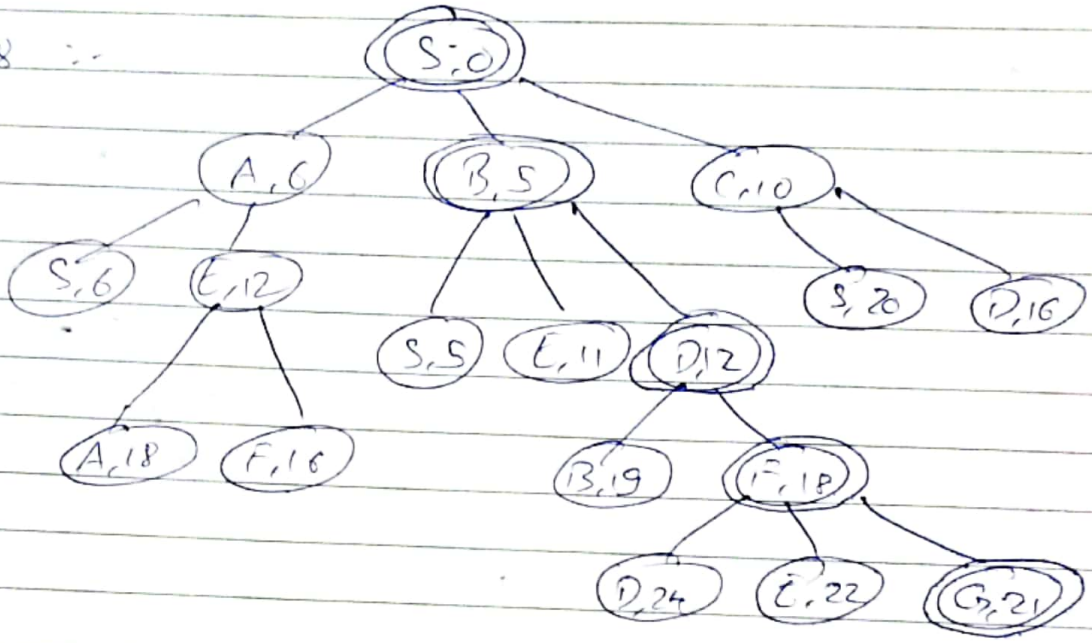
step 6 :



step 7 :-



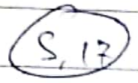
step 8 :-



1.4)

Initialize : Compute & store for S & put it in the openlist.

F - Store S = $f(S) = h(S) = 17$



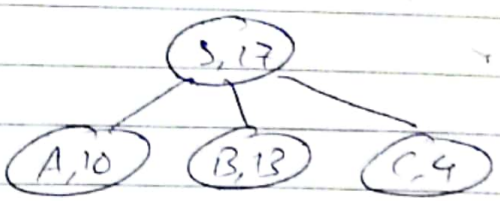
Step 1 :

F = Store of successor

$f(A) = h(A) = 10$

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

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

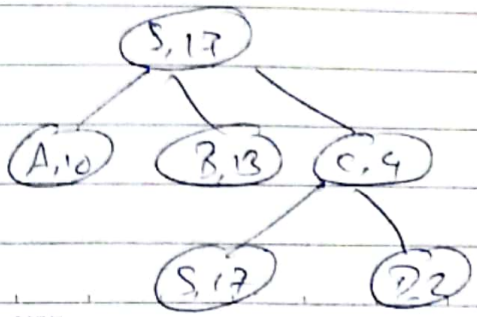


step 2 :

F - Store of Successor

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

$f(Q) = h(Q) = 2$



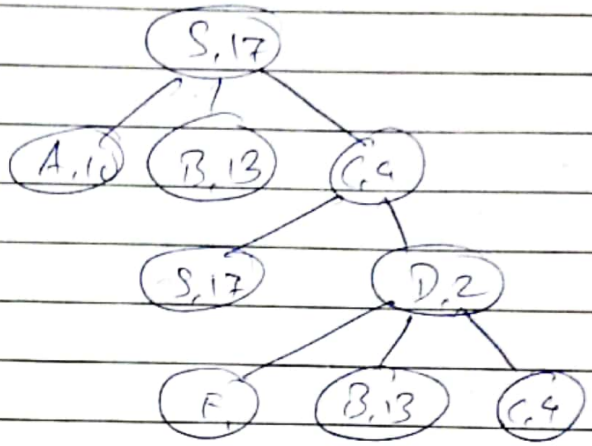
step 3:-

F = Sum of Successor

f(c) = h(c) = 4

f(B) = h(B) = 13

f(F) = h(F) = 1



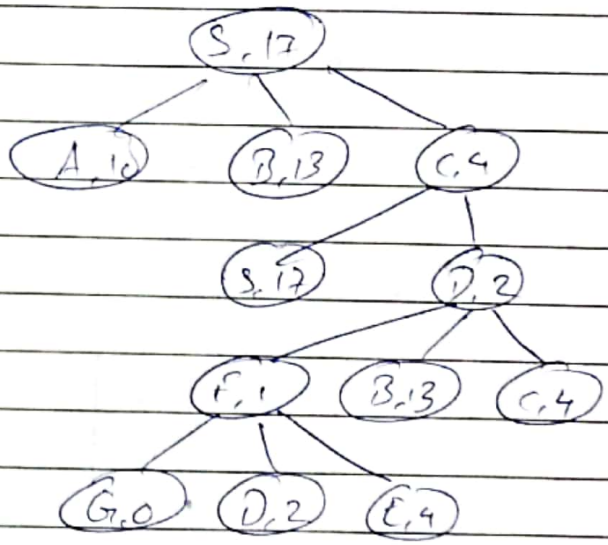
step 4:

F - Sum of Successor

f(D) = h(D) = 2

f(E) = h(E) = 4

f(G) = h(G) = 0



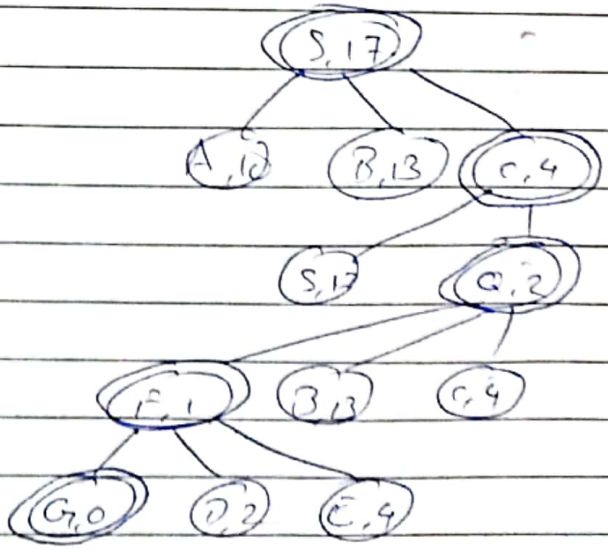
step 5:

Solution is

S → C → D → F → G with

Solution c.f: 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.

In our case we can reach the final configuration in at least 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

Solution 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 } } →
{ { 8,7,6 } { 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 all equally costly the cost would be

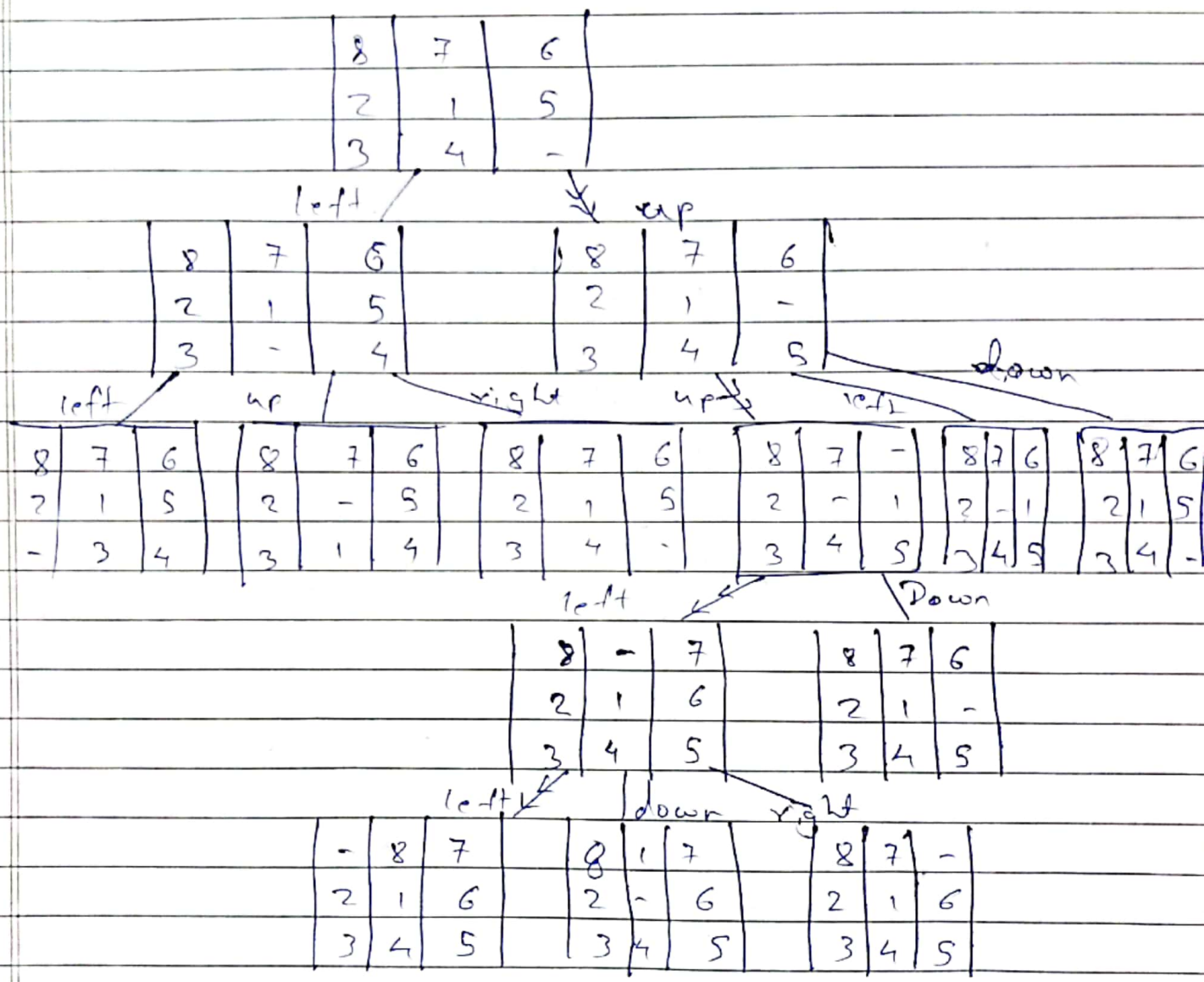
$g(n) = 6.$

Assignment No. 1

Name: [redacted]

i)

→



Final configuration.

e) For i = 1, n = initial state.

h_1(initial) = Misplaced tiles count except space

h_1(initial) = 4

n = goal state

h_1(goal) = 0

For i = 2, n = initial state

h_2(initial) = Directly replaced 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 position of all tiles except space.

h_3(initial) = 0+0+0+0+1+1+1+1

= 4

For n = goal state

h_3(goal) = 0