Name : Amruta G. Puppal

Class : BE IT

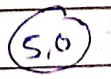
Roll No: 50

Subject : JS Lab

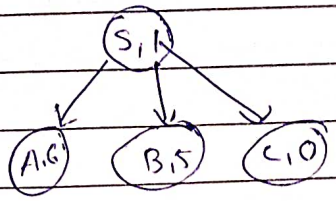
Dop	DOA	marks	sign

Q.1]

1.1] → step 0:



Step 1:



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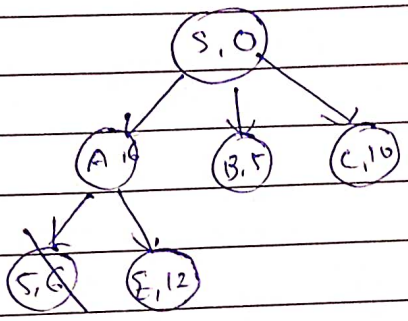

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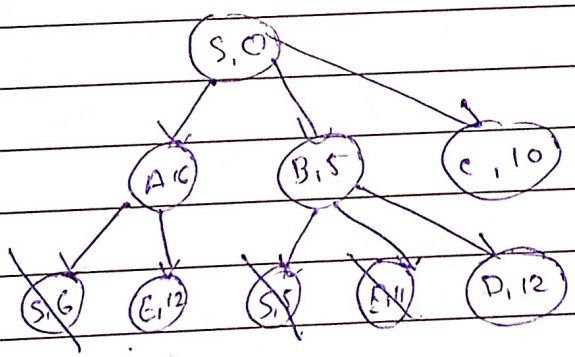

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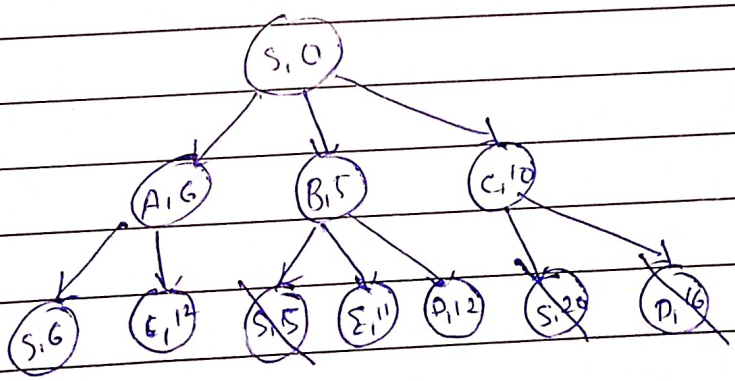
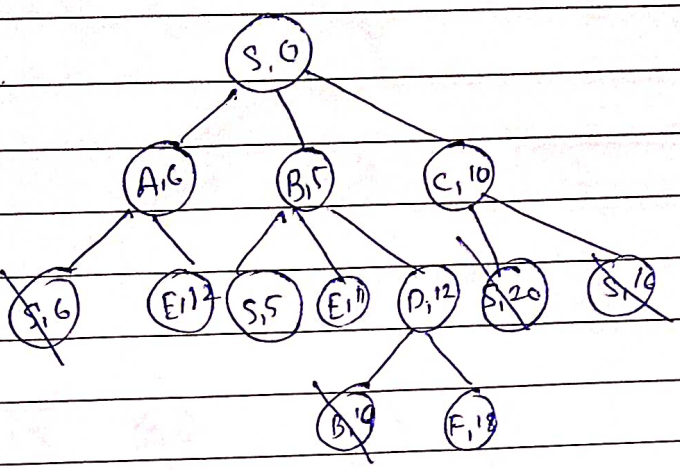
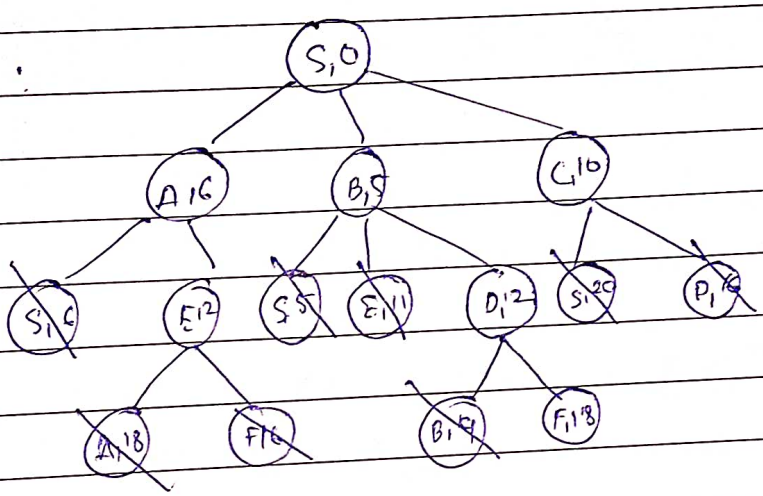


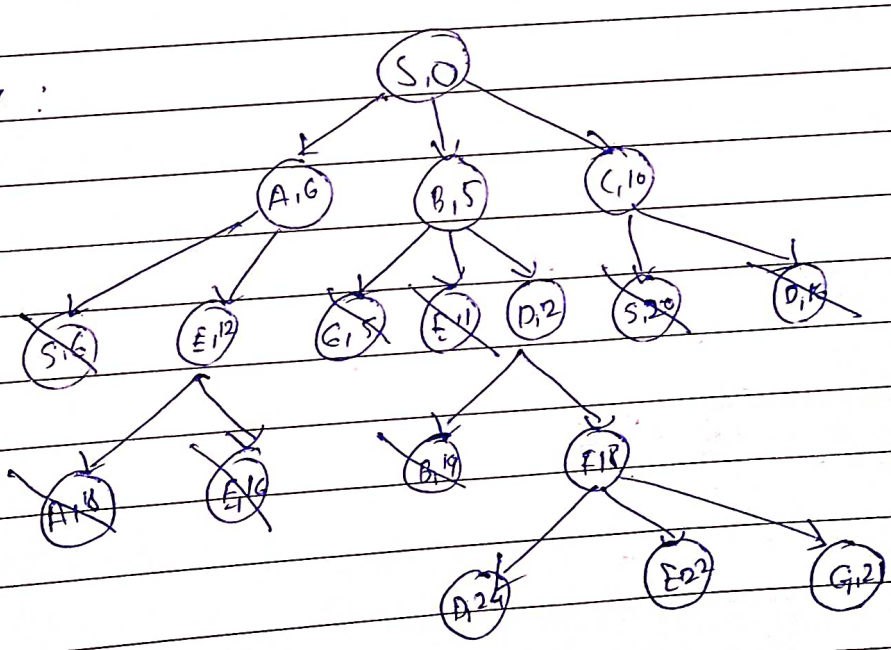
Step 5 :



Step 6 :



Step 7 :



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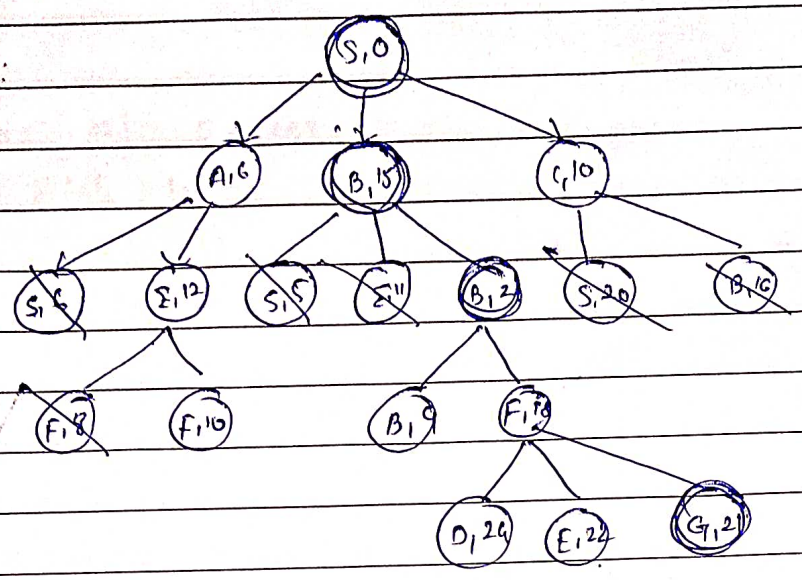


1.4] →

Initializat^n: Computer f-source for S & put it in openlist.

f source S : $f(S) = h(S) = 17$ (S,17)

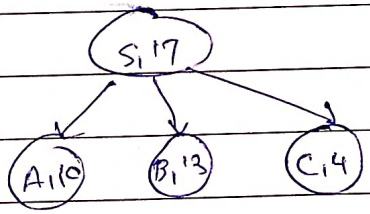
Step 1:

f source of successor

$f(A) = h(A) = 16$

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

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

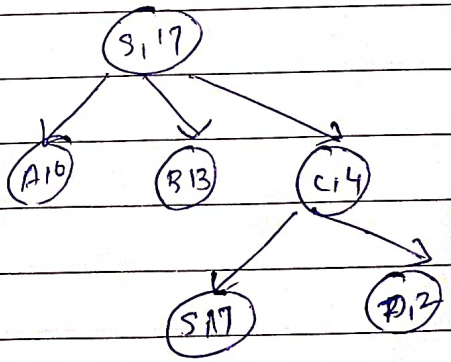


Step 2:

F source of successors

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

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



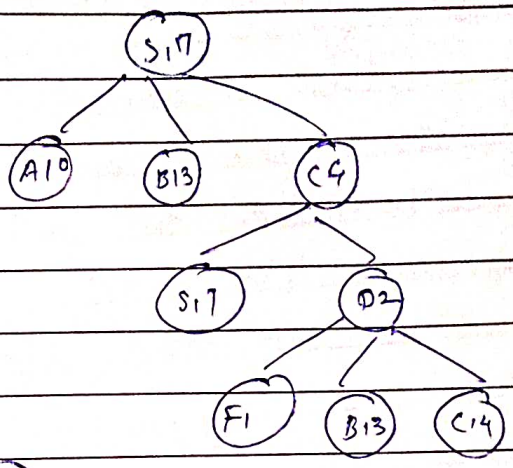
Step 3:

F_source of successor

F(C) = h(C) = 4

F(B) = h(B) = 13

F(F) = h(F) = 1



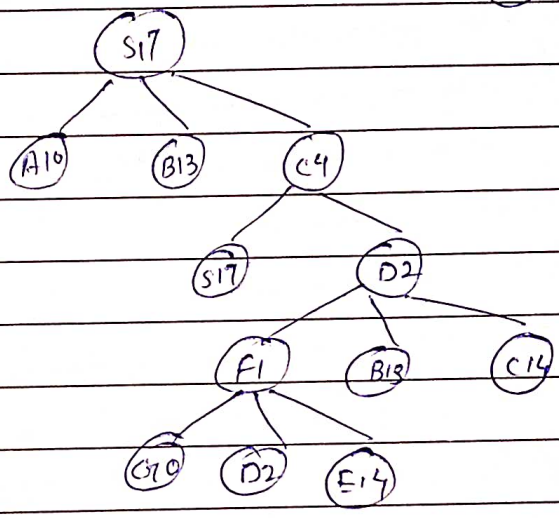
Step 4:

F_source of successor

F(D) = h(D) = 2

F(F) = h(E) = 4

F(G) = h(G) = 0



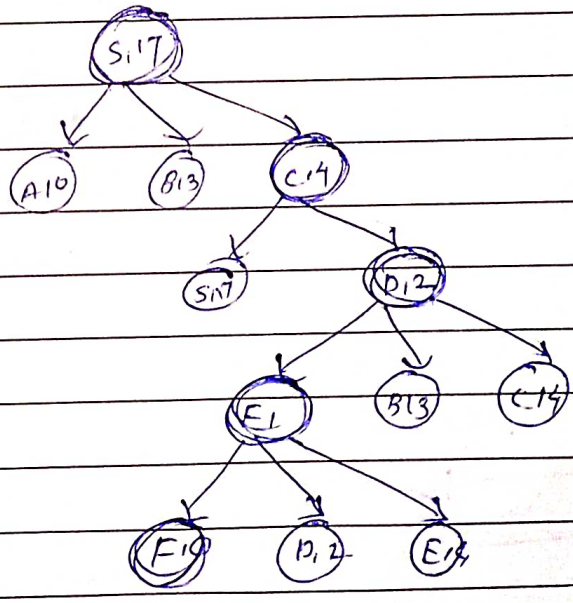
Step 5:

Solut^n is:

S → C → F → G with

Solut^n: 10+6+6+13

= 25.



Q.7]

a) Lowest path g(n) can be cost to reach goal configuratn in least steps. In our case, we can reach 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 foll. 8 puzzle instance.

8	7	6
2	1	5
-	3	4

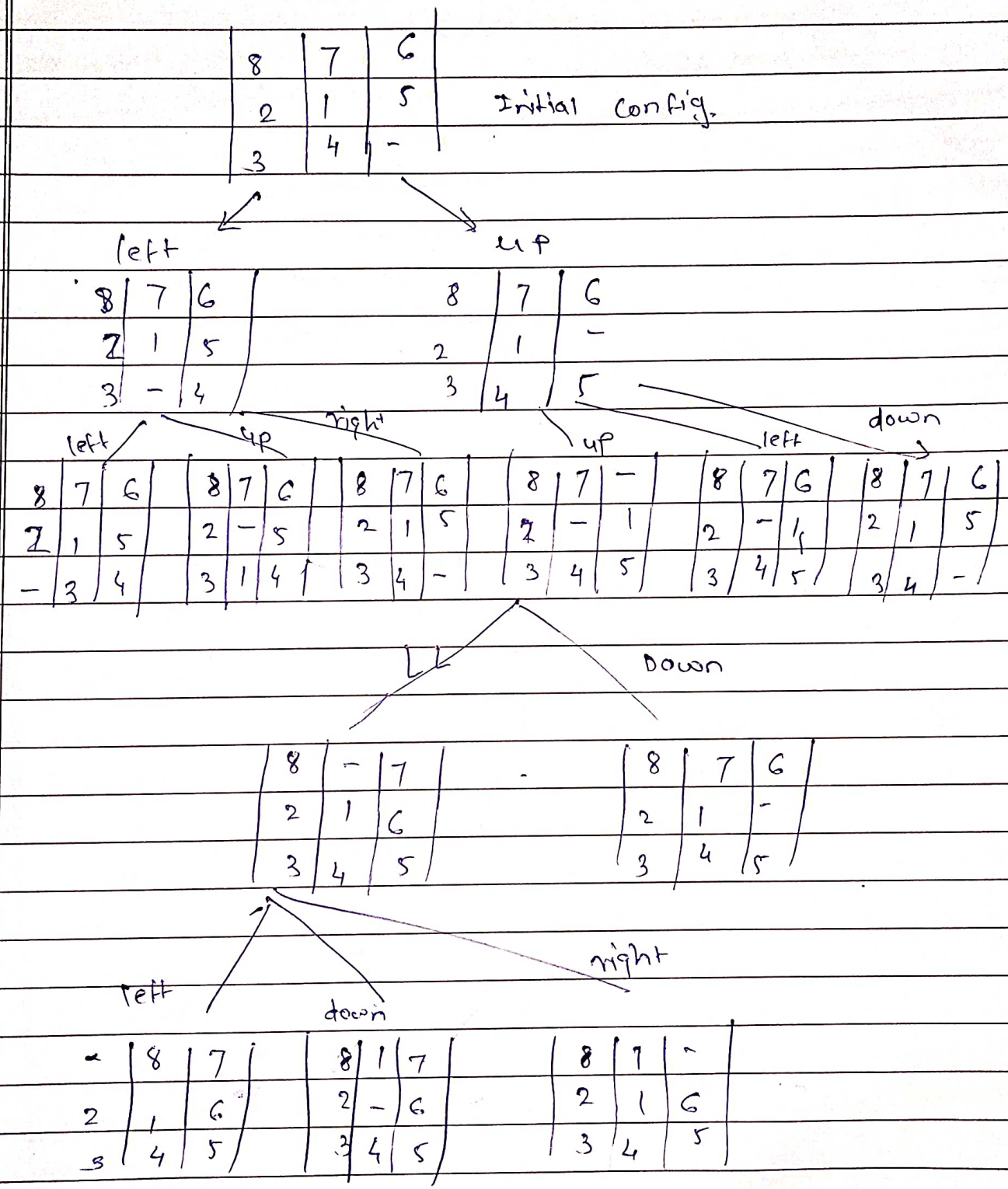
Solutn can be represented as:

{ {8,7,6} {2,1,5} {-,3,4,-3} } → {{8,7,6}, {2,1,5}, {3-4}} → {{8,7,6} {2,7,5} {3,4,-1}} → {{8,7,6}. {2,7,-} {3,4,5}} → { {8,7,-} {2,1,5} {3,4,5}} → {{8,-7} {2,16} {3,4,5,5}} → {{-8,7} {2,16} {3,4,5}}

Since all moves are equally costly and cost was be

$$g(n) = 6$$

Q)



Final Configuration.

e) →

for i = 1 n = initial state.

h_1 (initial) = misplaces tiles count except space

h_2 (initial) = 4

n = goal state.

h_1 (goal) = 0

for i = 2 n = initial state

h_2 (initial) = 4

for n = goal state

h_2 (goal) = 8

for i = 3 n = initial state

h_3 (initial) = sum of dist. betw^n. current and correct posit^n 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.