

Name :- Vipul chandrakant karle

(class) :- B.E./T-T

Roll No :- 27

Subject :- Is Lab

Q. 1

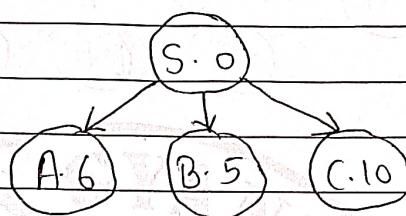
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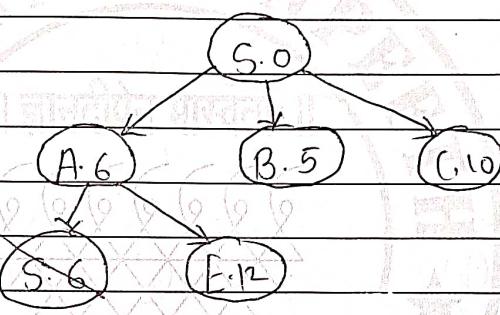
Step 0 :-



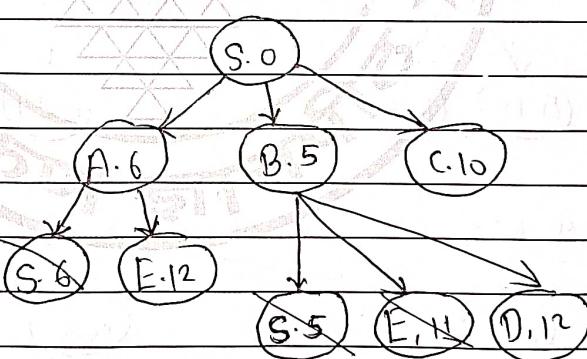
Step 1 :



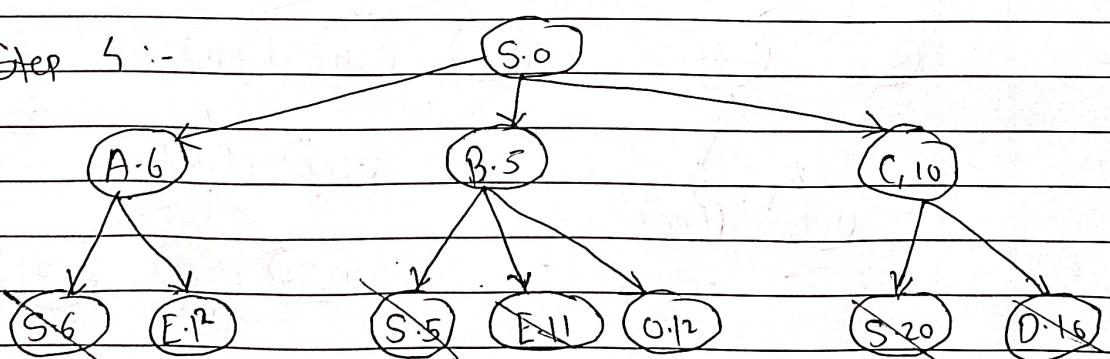
Step 2

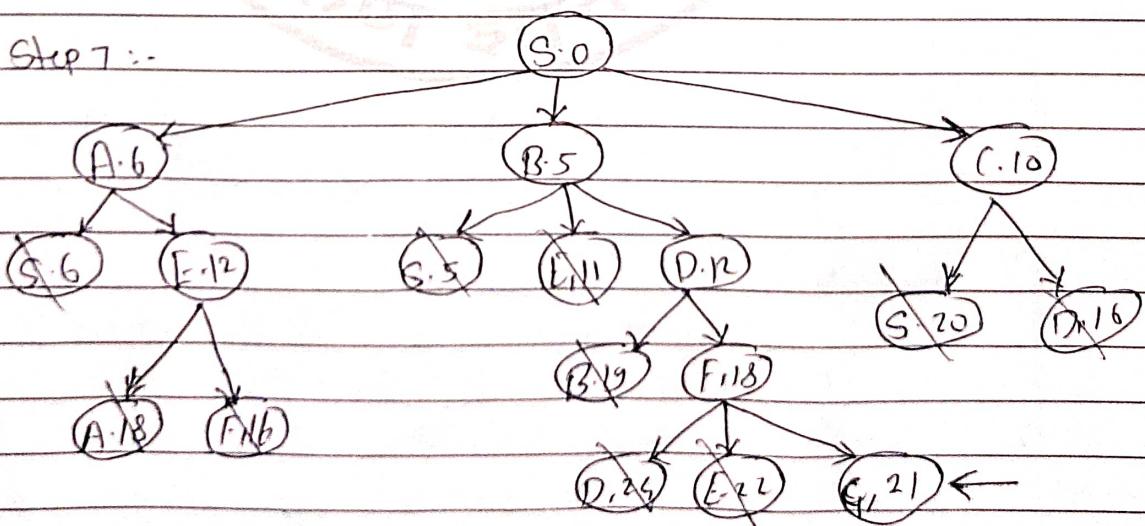
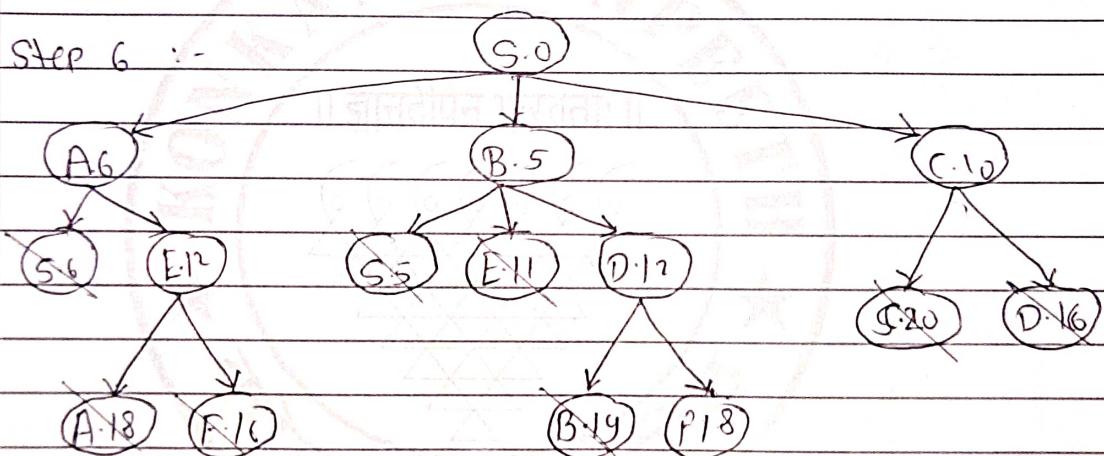
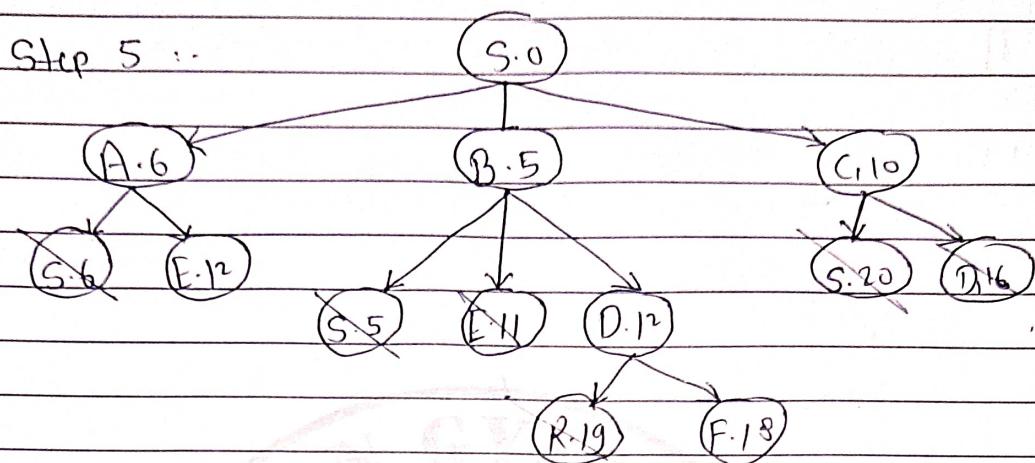


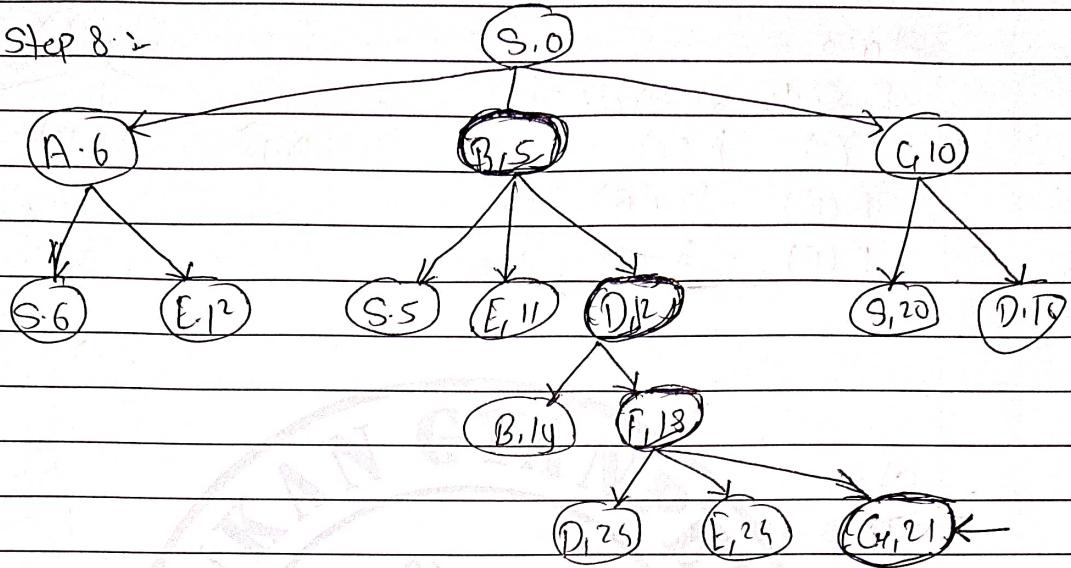
Step 3 :-



~~Step 5~~ :-







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\Rightarrow Initialization :- Compute F-source for S & Put it in openlist

$$F - \text{scale } s : f(s) = h(s) = 17$$

5,17

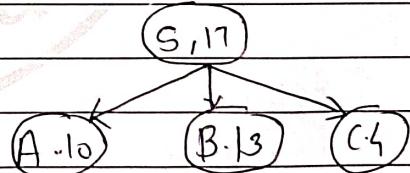
Step 1:

F - Scale of Success

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

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

$$f(c) = h(c) = 5$$

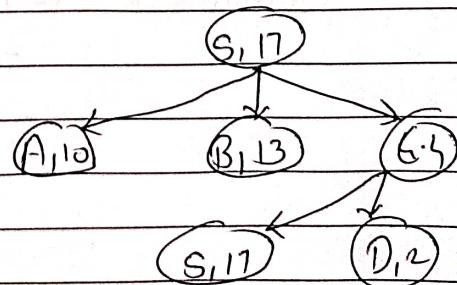


Step 3 :-

P. Scale of Success

$$F(s) = h(s) \Rightarrow 17$$

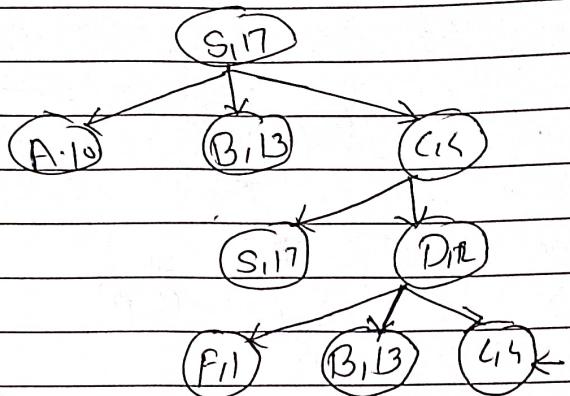
$$F(D) = h(D) = 2$$



Step 3 :-

F. Scale at Survey

$$\begin{aligned} F(C) &= h(C) = 4 \\ F(B) &= h(B) = 13 \end{aligned}$$



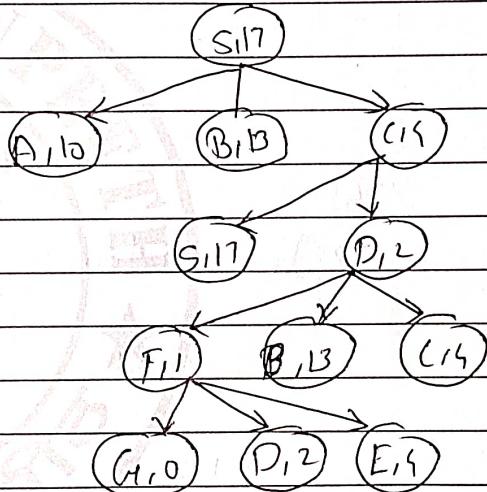
Step 4 :-

P-Scale of Scale

$$F(D) = h(D) = 2$$

$$P(E) = h(E) = 5$$

$$P(G) \rightarrow h(G) = 0$$

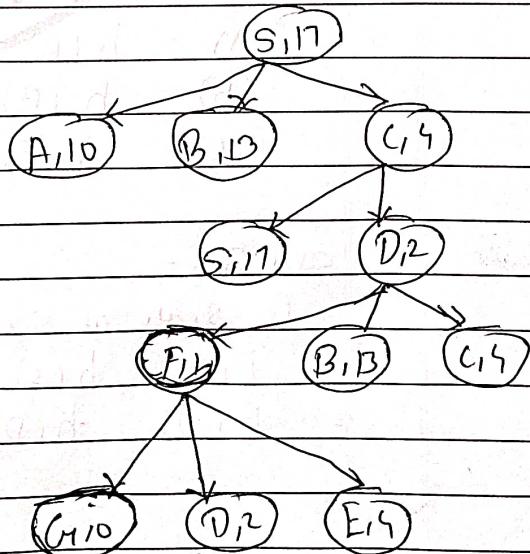


Step 5 :-

Solution is

$S \rightarrow C \rightarrow D \rightarrow F \rightarrow G_1$ with

$$\begin{aligned}\text{Solution Cost} &= 10 + 6 + 6 + 3 \\ &= 25\end{aligned}$$



Q. 2

a) \Rightarrow The lowest path cost $g(n)$ can be the cost to reach the goal configuration in least step.

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

$$g(n) = 1 + 1 + 1 + 1$$

$$g(n) = \cdot$$

Consider the following 8-puzzle instance

8	7	6
2	1	5
-	3	4

Solution can be represented as

$$\{ \{ 8, 7, 6 \}, \{ 2, 1, 5 \}, \{ -3, 4 \} \} \rightarrow \{ \{ 8, 7, 6 \}, \{ 2, 1, 5 \}, \{ 3, -1, 4 \} \}$$

$$\{ \{8, 7, 6\}, \{2, 1, 5\}, \{3, 4, -1\} \} \rightarrow \{ \{8, 7, 6\}, \{2, 1, -1\}, \{3, 4, 5\} \} \rightarrow$$

$$\{ \{ 8, 7, -3, \{ 2, 1, 5 \} \}, 3, 4, 5 \} \rightarrow \{ \{ 8, -7 \}, \{ 2, 1, 6 \}, \{ 3, 4, 5 \} \} \rightarrow$$

$$\{ \{-8, 7\}, \{2, 1, 8\}, \{3, 4, 5\} \}$$

Since all the moves are equally cost. will be

$$\text{Ex } g(n) = 6$$

3

8	7	6
2	1	5
3	4	-

Initial Confs

Left

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8	7	6		8	7	6
2	1	5		2	1	-
3	-	5		3	5	5

Left

1

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三

1

Letter

8	7	6		8	7	6		8	7	-	8	7	6	8	7	6
2	1	5		2	-	5		2	-	1	2	-	1	2	1	5
-	3	4		3	1	4		3	5	5	3	4	5	3	5	-

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		8	7	6	9		8	-	7	8	7	6
		2	1	5			2	1	6	2	1	-
		3	4	5			3	4	5	3	4	5

Letter

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-	8	7		8	1	7		8	7	-
2	1	6		2	-	6		2	1	6
3	4	5		3	4	5.		3	4	5

Final Configuration

e

\Rightarrow For $i=1$, $n = \text{initial state}$

`hi(initial) = Misplaced lines count except space`

hi (initial) = 5

$$n = 9 \text{ at state}$$

h1 (goal) =

Part i = 2 . initial state

$h_2(\text{initial})$ = exactly replaced fly count except space

$$h_2(\text{initial}) = 5$$

For $n = \text{goal state}$

$$h_2(\text{goal}) = 8$$

For $j = 3$, $n = \text{initial state}$

h_3 (initial) = sum of manhattan dist between current

and correct position of all files except

Space

$$h_3(\text{initial}) = 0 + 0 + 0 + 0 + 1 + 1 + 1 + 1$$

$\begin{matrix} 2 & 4 \end{matrix}$

For $n =$ goal state

$$h(3) h_3(\text{goal}) = 0$$