Ques. 1

a. A* Search

No. of Step	Current Node	Frontier Node	Visited Nodes	Cost (g(n))	Heuristic (h(n))	f-Value h(n) + g(n)
1.	S	A, B, C	Nil	0	8	8
2.	B	A, F, D, C, G3	S	1	1	2
3.	A	F, D, C, G1, G3	S, B	3	2	5
4.	F	D, C, G1, G3	S, B, A	3	3	6
5.	D	E, G2, C, G1, G3	S, B, A, F	4	4	8
6.	E	G1, G2, C, G3	S, B, A, F, D	6	1	7
7.	G1	G2, C, G3	S, B, A, F, D, E	8	0	8

Frontier Node: The Node which are currently open to explore at that instant

f-Value: This parameter involves the summation of path cost and heuristic for the Node.

Final Path: $S \rightarrow B \rightarrow A \rightarrow F \rightarrow D \rightarrow E \rightarrow G1$

b. Uniform Cost Seach

No. of Step	Current Node	Frontier Node	Visited Nodes	Cost (g(n))
1.	S	A, B, C	Nil	0
2.	B	A, F, D, C, G3	S	1
3.	A	F, C, D, G1, G3	S, B	3
4.	F	D, C, G1, G3	S, B, A	3
5.	D	C, E, G2, G1, G3	S, B, A, F	4
6.	C	G1, G2, E, G3	S, B, A, F, D	5
7.	E	G2, G1, G3	S, B, A, F, D, C	6
8.	G1	G2, G3	S, B, A, F, D, C, G1	8

Final Path: $S \rightarrow B \rightarrow A \rightarrow F \rightarrow D \rightarrow C \rightarrow G1$

c. Iterative Deepening A* Seach

f- Values	Node
8	S
5	A
2	B
13	C
9	D
8	E
6	F
8	G1
9	G2
13	G3

f-Value for every Node in Graph

Step	Threshold	Frontier Node	Expanded Node	Explored Node	Cost (g(n))	Heuristic (h(n))	f-Value h(n) + g(n)
1	8	A, B, C	S	Nil	0	8	8
2	8	D, G1, B, C	A	S	3	2	5
3	8	D, F, G3, C, G1	B	S, A	1	1	2
4	8	D, C, G1, G3	F	S, A, B	3	3	6
5	8	E, G2, C, G1, G3	D	S, A, B, F	4	4	8
6	8	G1, C, G2, G3	E	S, A, B, F, D	6	1	7
7	8	C, G2, G3	G1	S, A, B, F, D, E	8	0	8

Final Path: $S \rightarrow F \rightarrow D \rightarrow E \rightarrow G1$

Ques 2.

a.