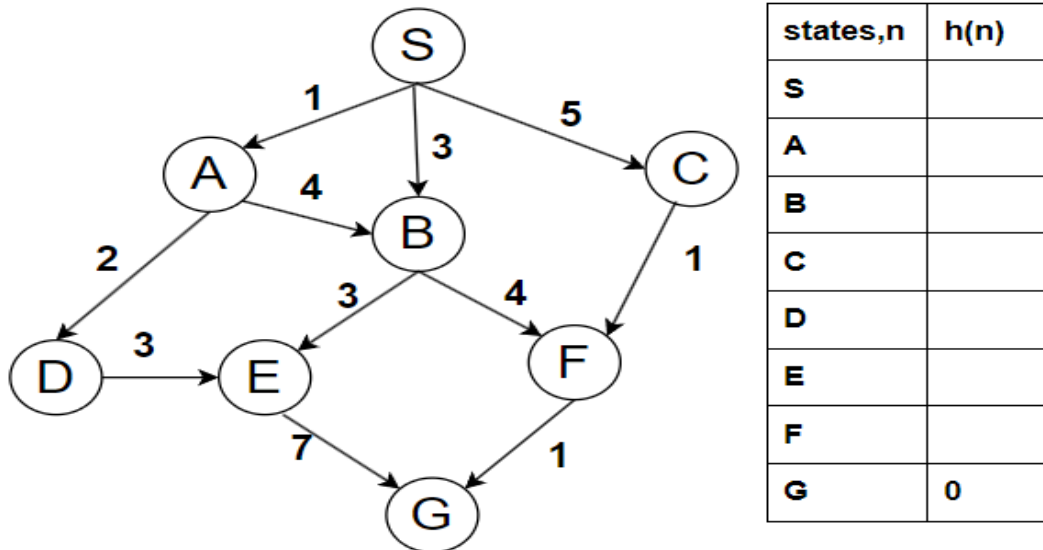# BRAC UNIVERSITY
Department of Computer Science and Engineering
CSE 422: Artificial Intelligence
Assignment -01

Question-01

A. For the following state space tree define the heuristic values for the following states such that it is admissible.

| states,n	h(n)
S	
A	
B	
C	
D	
E	
F	
G	0

B. Perform Best First Search and A* search algorithm on the following graph with the defined heuristic values.

C. Now comment on the heuristic values defined whether it is consistent or no by showing the calculations needed. And correct the heuristic values to be consistent.

D. For a state, from which the goal node is unreachable, what do you think the actual path cost and heuristic value should be?

Question-02
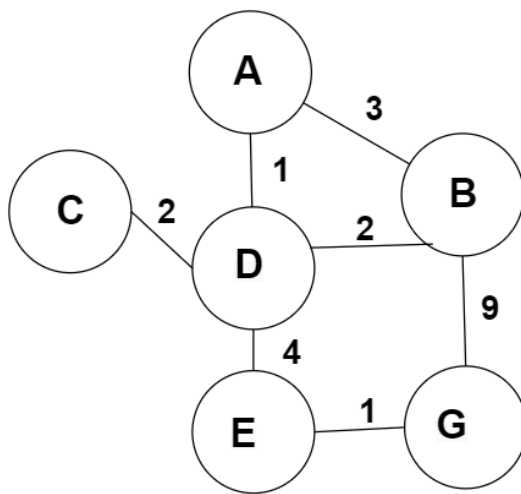
Nodes,n	$h_1(n)$	$h_2(n)$
A	4	5
B	6	6
C	4	5
D	3	4
E	1	1
G	0	0

A) From the above context, please explain briefly which heuristic function would be better?
B) Now after choosing the heuristic, perform A* Search
C) Demonstrate if the chosen heuristic is consistent or not.

Question-03
A. What are the properties of Local Search? For what kind of problems can we find Local Search useful?
B. Some examples of Local Search Algorithms
C. What are the drawbacks of Hill Climb Search and its Remedies
D. Demonstrate the drawbacks Local Maxima and Plateau of Hill-Climb Approach using 8-Puzzle
E. What are the key steps of simulated annealing?
F. How is the concept of probability implemented in Simulated annealing?
G. What is the relationship between Temperature and the probabilistic value e^{del E/T}?