University of Asia Pacific
Dept. of Computer Science and Engineering
Class Test – 02, Fall-20

Course Code: CSE 403 (A) Course Title: Artificial Intelligence and Expert Systems

Total Marks: 20 Time: 40 (30+10) Mins

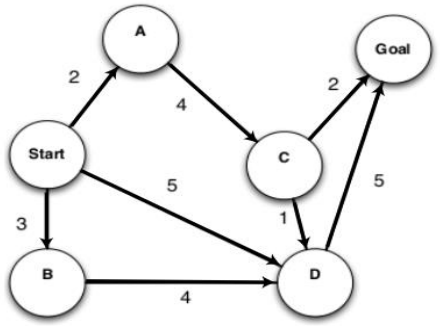
Answer the following questions:

1. Your target is to reach the goal node 'G' from start node 'Start' with the optimum cost. Simulate the following problem with A* search algorithm and show the shortest path with the fringe for each iteration. There are 6 nodes in the graph where the heuristics value of the 5 nodes are as follows: 12

h(Start) = (Last 2 digits of your id) % 4 + 4	h(A) = (Last 2 digits of your id) % 7 + 3
h(B) = (Last 2 digits of your id) % 5 + 2	h(C) = (Last 2 digits of your id) % 3 + 1
h(D) = (Last 2 digits of your id) % 6 + 2	

Here **% refers** to **mod** operation. For example, if the last digits of your id is 16 then

h(Start) = 16 % 4 + 4 = 4	h(A) = 16 % 7 + 3 = 5	h(B) = 16 % 5 + 2 = 3
h(C) = 16 % 3 + 1 = 2	h(D) = 16 % 6 + 2 = 6	



3+2+3

2. Consider a state space where the start state is 1 and the successor function for state i (where i = 1, 2, …) returns three states such as: 3i-1, 3i, 3i+1.
   a) Draw the state space graph for states 1 to 20.
   b) Suppose the goal state is 17. List the order in which nodes will be visited for:
   (i) breadth-first search and (ii) iterative deepening search