Course Code: CSE 403 (B)   Course Title: Artificial Intelligence and Expert Systems
Total Marks: 20   Time: 40 (30+10) Min

Answer the following questions:

1. Your target is to reach the goal node 'z' from start node 'a' with the most optimum cost.   18
    Simulate the following search problem with A* search algorithm, **draw** the search tree and
    determine the shortest path with the **fringe** for **each iteration**. Assume that states with
    earlier alphabetical order are expanded first. The heuristic values of the 6 nodes are as
    follows:

h(a) = (Last 2 digits of your id) % 4 + 1	h(b) = (Last 2 digits of your id) % 3 +3
h(c) = (Last 2 digits of your id) % 3 + 1	h(d) = (Last 2 digits of your id) % 2 + 2
h(e) = (Last 2 digits of your id) % 5 + 2	h(z) = 0

Here % refers to **mod** operation. For example, if the **last two digits** of someone's **ID is 16**
then:

h(a) = 16 % 4 + 1 = 1	
h(b) = 16 % 3 + 3 = 4	
h(c) = 16 % 6 + 1 = 5	
h(d) = 16 % 2 + 2 = 2	
h(e) = 16 % 5 + 2 = 3	
h(z) = 0	
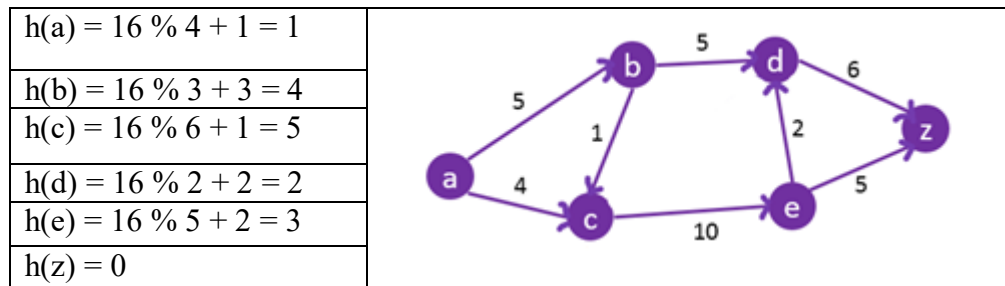
2. Mention the two requirements of a good heuristic function with mathematical relations.   2