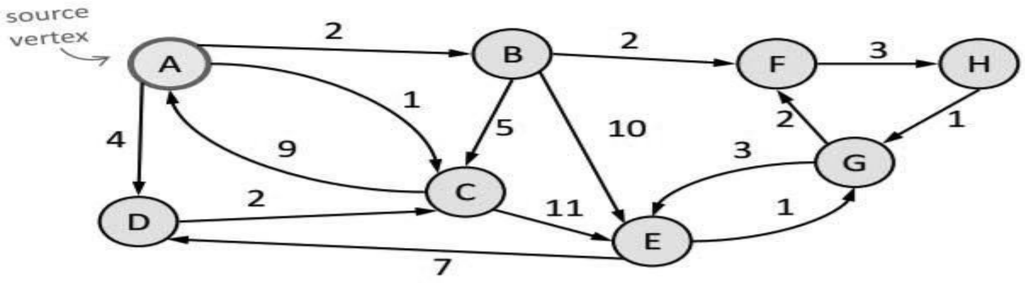
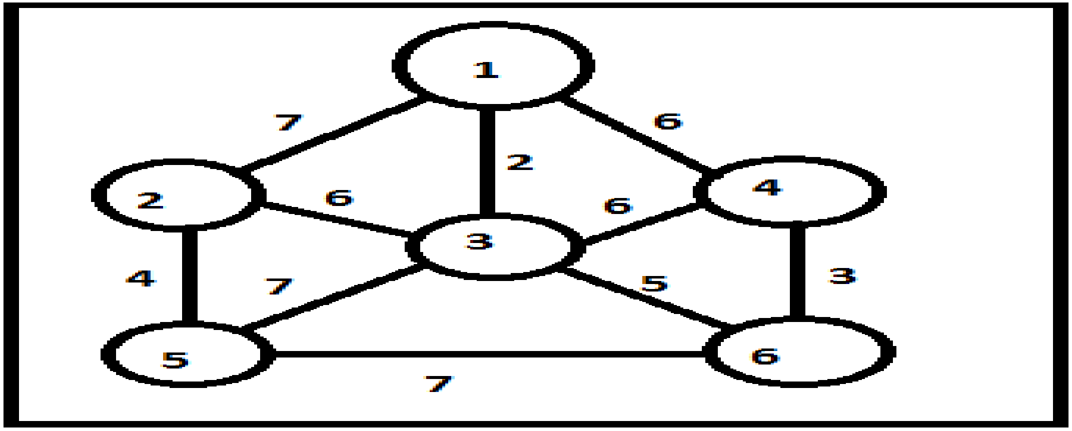
Department of Computer Science and Information Technology

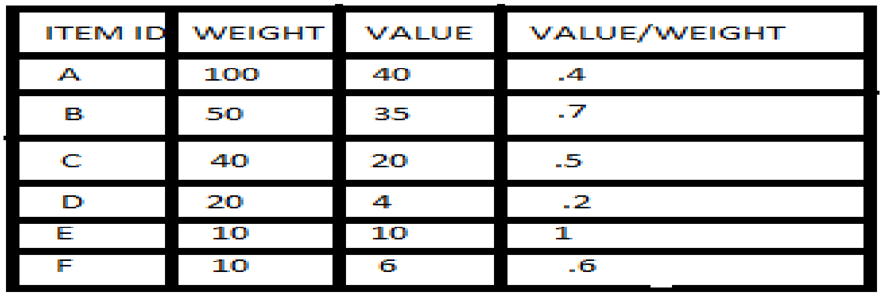
Assignment-3

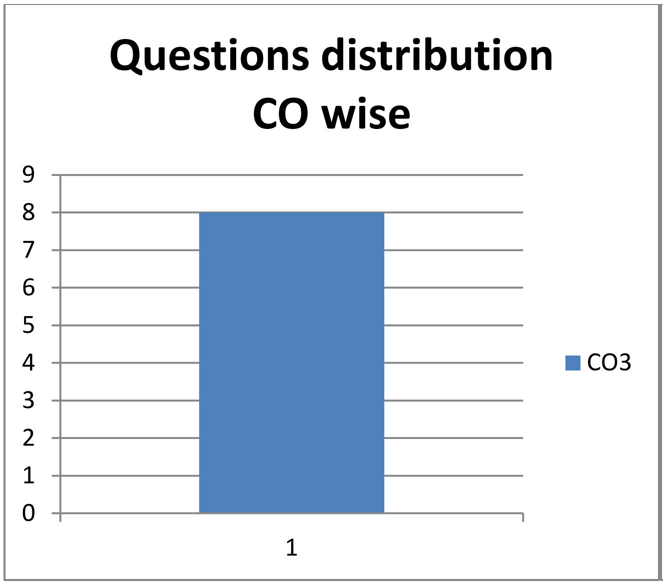
Design and Analysis of Algorithm

Q. No.	Questions	CO	Bloom’s level

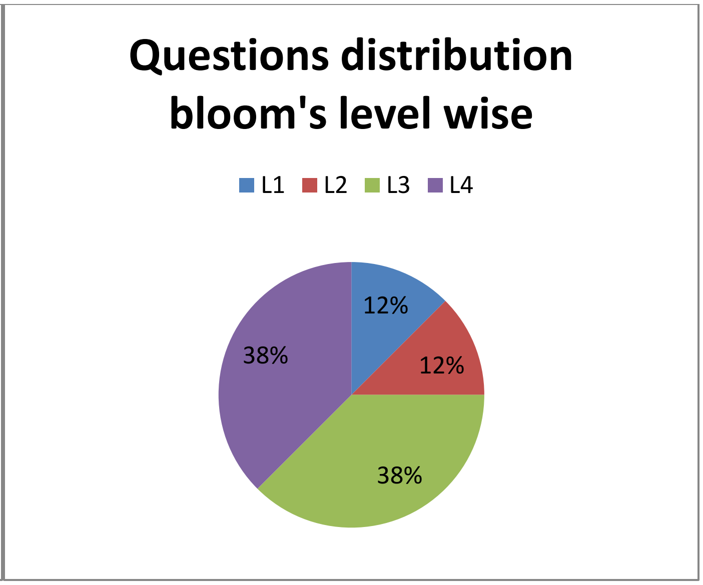
1.	Consider the following instance for knapsack problem. Find the solution using Greedy method:
	N= 10, W=130
	P [] = {21, 31, 43, 53, 41, 63, 65, 75}
	V [] = {11, 21, 31, 33, 43, 53, 65, 65}
		CO3	L3

2.	Apply the greedy single source shortest path algorithm on the following graph:  source vertex A B C D E F G H 2 2 3 1 5 10 4 9 2 1 3 2 11 1 7	CO3	L4
3.	Define spanning tree. Write Kruskal’s algorithm for finding minimum cost spanning tree. Describe how Kruskal’s algorithm is different from Prim’s algorithm for finding minimum cost spanning tree.	CO3	L4
4.	What are greedy algorithms? Explain their characteristics?	CO3	L2
5.	What is Minimum Cost Spanning Tree? Explain Kruskal’s Algorithm and Find MST of the Graph. Also write its Time-Complexity.  1 2 3 4 5 6 7 6 2 6 6 4 7 5 3 7	CO3	L4
6.	. Define feasible and optimal solution.	CO3	L1

<table>
<tr><td><b>7.</b></td><td>Given the six items in the table below and a Knapsack with Weight 100, what is the solution to the Knapsack problem in all concepts. I.e. explain greedy all approaches and find the optimal solution.

<table>
<tr><th>ITEM ID</th><th>WEIGHT</th><th>VALUE</th><th>VALUE/WEIGHT</th></tr>
<tr><td>A</td><td>100</td><td>40</td><td>.4</td></tr>
<tr><td>B</td><td>50</td><td>35</td><td>.7</td></tr>
<tr><td>C</td><td>40</td><td>20</td><td>.5</td></tr>
<tr><td>D</td><td>20</td><td>4</td><td>.2</td></tr>
<tr><td>E</td><td>10</td><td>10</td><td>1</td></tr>
<tr><td>F</td><td>10</td><td>6</td><td>.6</td></tr>
</table></td><td>CO3</td><td>L3</td></tr>
<tr><td><b>8.</b></td><td>What do you mean by convex hull? Describe an algorithm that solves the convex hull problem. Find the time complexity of the algorithm.</td><td>CO3</td><td>L3</td></tr>
</table>



Questions distribution CO wise



Questions distribution bloom's level wise