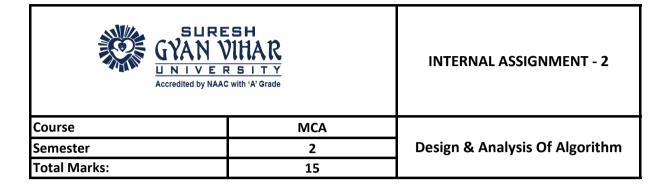|		
SURESH GYAN VIHAR UNIVERSITY Accredited by NAAC with 'A' Grade		INTERNAL ASSIGNMENT - 1
Course	MCA	
Semester	2	Design & Analysis Of Algorithm
Total Marks:	15	

Q.1.   Write answers for any two questions from below. (5 marks each – Word limit – 500)

A.   Draw the portion of state space tree generated by recursive backtracking algorithm for sum of subsets problem with an example.

B.   State the Greedy Knapsack? Find an optimal solution to the Knapsack instance n=3, m=20, (P1, P2, P3) = (25, 24, 15) and (W1, W2, W3) = (18, 15, 10).

C.   Discuss the Dijkstra's single source shortest path algorithm and derive the time complexity of this algorithm.

Q.2.   Write short notes on all of the following topics (1 mark each - Word limit - 100)

A.   In how many passes does the Merge sort technique sorts the following sequence 3,27,4,11,45,39,2,16,56?

B.   Define Bounding Function? Give the statement of 0/1 Knapsack FIFO BB.

C.   Compare the time complexities of solving the All Pairs Shortest Path problem using Floyds algorithm and using the Dijkstra's algorithm by varying the source node. Justify your answer.

D.   Derive the worst-case complexity of the Quick sort algorithm.

E.   Divide and conquer and Greedy method.

Q.1. Write answers for any two questions from below. (5 marks each – Word limit – 500)

A. Explain the Optimal Binary Search Tree with an example. Explain how the traveling salesperson problem is solved by using LC Branch and Bound.

B. What is principle of optimality? Explain how travelling sales person problem uses the dynamic programming technique with example.

C. Explain the Single source shortest path problem with an example.

Q.2. Write short notes on all of the following topics (1 mark each - Word limit - 100)

A. What is a Hamiltonian Cycle? Explain how to find Hamiltonian path and cycle using backtracking algorithm.

B. Describe Different characteristics of an algorithm.

C. What is bounding function? Give example.

D. Using step count find the time complexity of sum of 'n' natural numbers.

E. Least-Cost Branch and Bound