University of Sargodha

BS 4th Term Examination 2019

Subject: Computer Science **Paper: Design and Analysis of Algorithms (CS-3143)**

Time Allowed: 2:30 Hours **Maximum Marks: 80**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

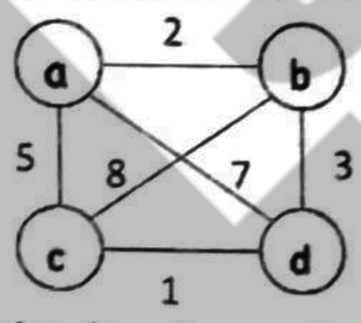
Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (16*2)

i. What is Knuth Morris Pratt algorithm?
ii. What is Naïve String Matching algorithm?
iii. What is divide and conquer approach?
iv. Define the term complexity of an algorithm.
v. What do you know about Floyd Warshall algorithm?
vi. What are the different types of notations used for representation of complexity?
vii. Shortly describe the binary search.
viii. Briefly describe the Bellman Ford algorithm.
ix. What is dynamic programming?
x. What is a complete binary search tree?
xi. What will be the complexity of two N-times nested loops?
xii. Define Breadth First Search.
xiii. Define Depth First Search.
xiv. What is recursion?
xv. Why do we use algorithms?
xvi. What do you know about Greedy algorithm?

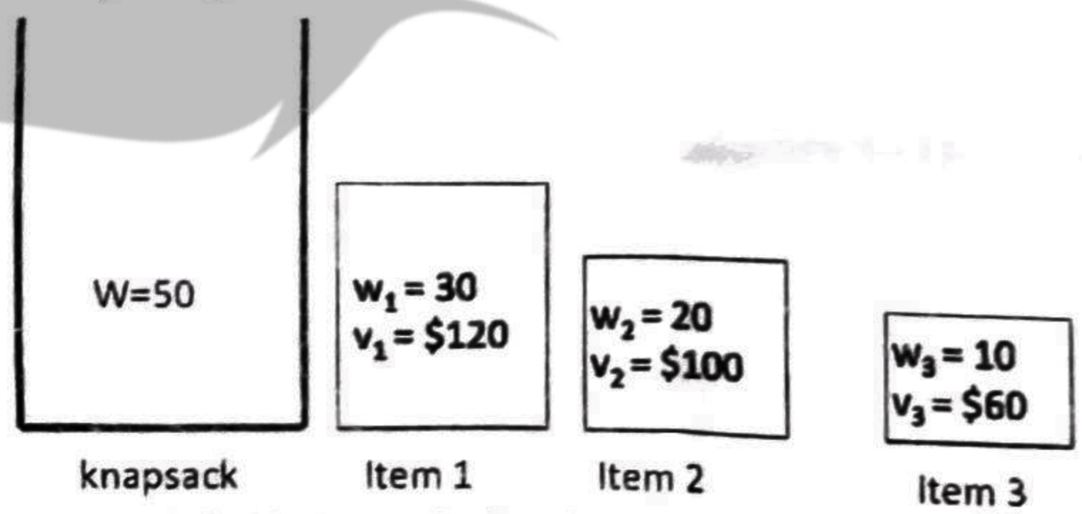
Subjective Part (3*16)

Q.2. Apply the Travelling Salesman problem on the following graph and find the optimal solutions if any.



Q.3. Write a program to insert or delete item from a circular queue.

Q.4. Items with value in dollars and weight in KG along with the knapsack of capacity 50 KG is displayed in the following figure. Compute the optimal solution with respect to total value in knapsack by apply the concept of Knapsack problem.



Q.5. Given an array A={12, 11, 13, 5, 6}. Sort it out using insertion sort algorithm.

Q.6. Discuss Dijkstra's algorithm and for what purposes it can be used?