Department of Computer Science and Information Technology

**Assignment-5**

**Design and Analysis of Algorithm**

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| **Q. No.** | **Questions** | **CO** | **Bloom’s level** |
|  | Write Rabin Karp string matching algorithm. Working modulo q=11, how many spurious hits does the Rabin karp matcher in the text T= 3141592653589793, when looking for the pattern P=26. | CO5 | L3 |
|  | Discuss the advantages of using B-Tree. Insert the following Information 86, 23, 91, 4, 67, 18, 32, 54, 46, 96, 45 into an empty B-Tree with degree t = 2 and delete 18, 23 from it. | CO2 | L4 |
|  | Describe in detail Knuth-Morris-Pratt string matching algorithm. Compute the prefix function 𝜋 for the pattern ababbabbabbababbabb when the alphabet is Σ = {a,b}. | CO5 | L4 |
|  | Write and explain the algorithm to solve vertex cover problem using approximation algorithm. | CO5 | L4 |
|  | Explain Randomized algorithm in brief. | CO5 | L4 |
|  | Find an optimal parenthesization of a matrix chain product whose sequence of dimensions is {10, 5, 3, 12, 6}. | CO4 | L4 |
|  | Solve the Subset sum problem using Backtracking, where  n=4, m=18, w[4] = {5, 10, 8, 13} | CO4 | L4 |
|  | Define NP-Hard and NP- complete problems. What are the steps involved in proving a problem NP-complete? Specify the problems already proved to be NP-complete. | CO5 | L3 |
|  | Apply the greedy single source shortest path algorithm on the following graph: | CO3 | L4 |
|  | What is an approximation algorithm? What is meant by P(n) approximation algorithms? Discuss approximation algorithm for Travelling Salesman Problem. | CO5 | L4 |