weighted directed graph.

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Q. 6. What is the difference between Binary search and Binary Search Tree? Explain with the help of suitable examples CO1

OR

What is Heap? Explain Heap sort Algorithm with example. CO3

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ROLL No: | | | | | | | | | | | | |

Total number of pages:[2]
Total number of questions: 06

M.C.A. 5th Sem
Design and Analysis of Algorithms
Subject Code: MCA502
Paper ID:

Time allowed: 3 Hrs

Max Marks: 60

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (2×10)

Q. 1. Short-Answer Questions: All COs

(a) Define Big Oh Notation.
(b) Differentiate between graph and a tree.
(c) What do you mean by worst case analysis?
(d) Write the complexity of Radix sort.
(e) Give the Complexity of Heap sort.
(f) List various applications of BFS.
(g) What are various Tree Traversal Techniques?
(h) What are P and NP problems?
(i) What is minimum spanning tree?
(j) Explain in-place sorting and not-in-place sorting.

PART B (8×5)

Q. 2. Explain Queue with its different types. CO1

OR

What is Hashing? Expalin its different types in detail. CO1

Q. 3. Consider Five items along with their respective weights and values CO2
I = <il, i2, i3, i4, i5>, w = <5,10,20,30,40>, v = <30,20,100,90,160>
The capacity of the knapsack W=60. Find the solution for the fractional knapsack problem.

OR

Write Prim's Algorithm for finding minimum spanning tree. CO2

Q. 4. Write an algorithm of Quick sort and find its Complexity. CO3

OR

Define Spanning Tree. Write Kruskal's Algorithm for finding minimum spanning tree with suitable example. CO3

Q. 5. Give a suitable example and explain Breadth-First search and Depth-First search algorithms. CO4

OR

Write Dijkstra's Algorithm for single source shortest path problem on CO4