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| Department of Computer Science & Engineering |
| Pre-requisite Questioner on Courses: Data Structures and Design and Analysis of Algorithms |
| M.Tech First Semester Course: Advances in Algorithms  Course code: CST 503 (Compulsory Course) |

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| SET – 2 | |
|  | Operations on Trees and Graph |
|  | 1. Methods to represent Trees and Graphs in memory |
|  | 1. Various traversal on Trees |
|  | 1. Various traversal on Graphs |
|  | 1. Binary Search Tree: Basic, Operations, characteristics, Complexity |
|  | 1. Topological sorting on Graph |
|  | 1. Spanning tree: Prims and Kruskals method |
|  | 1. Bellman Ford Algorithm for shortest path |
|  | 1. Applications of trees, Graphs |
|  | 1. Principle of Backtracking and Applications of backtracking |
|  | 1. Various sorting and searching methods (bubble, insertion, selection, quick, linear search, binary search) |
|  | 1. Stacks, Queues, Linked List: Memory representation and different operations |
|  | 1. Advanced Data Structure: Red and Black Trees |

**Expected Outcome:**

The presentation should include:

1. Logic of solution and implementation algorithm (not in code)
2. Complexity equation of logic