**Computer Science and Information Technology Department, UoB, Quetta**

**Course: Advanced Algorithms and Analysis**

**Terminal Exam 2019**

**MSCS 2019-21 Roll No: \_\_\_\_\_\_\_\_\_ Max marks: 40**

**Note: Attempt all questions. Every question is of 10 marks. Do not write anything on the question paper.**

**Question No 1:** State whether the following statements are True or False.

1. Monte Carlo Algorithms are always fast, but only probably correct.
2. Las Vegas Algorithms are always correct but only probably fast.
3. Atlantic City Algorithms are probably correct and probably fast.
4. Monte Carlo, Las Vegas and Atlantic City Algorithms are all probabilistic algorithms.
5. Behavior of a randomized algorithm is determined only by its input.
6. Greedy Algorithm involves formulating the problem in the form of inequalities.
7. B Tree is well suited for storage systems that read / write large blocks of data.
8. In dynamic programming, a problem is recursively subdivided into smaller problems.
9. Simplex algorithm solves linear programming problems.
10. Dijkstra’s Algorithm is used for finding the shortest path between two given nodes.

**Question No 2:** Write the order In which the vertices of the following tree will be visited by

1. Breadth First Algorithm b) Depth First Algorithm



**Question No 3:** Solve the following recurrence using master’s theorem.

a) T(n) = 9T(n/3) + n b) T(n) = T(2n/3) + 1



**Question No 4:** Use Dijkstra algorithm to find the shortest path between nodes 1 and 5.