**SESSION DEC-2022**

**PROGRAM MCA**

**SEMESTER III**

**COURSE CODE & NAME DCA7104 Analysis and Design of Algorithms**

**CREDITS 4**

**SET-I**

**1. A. Define best case, worst case, and average case of an algorithm complexity. Explain with an example.**

**Ans:** Best Case: If an algorithm takes the least amount of time to execute a specific set of input, then it is called best case time complexity.

Worst Case: If an algorithm takes the maximum amount of time to execute a specific set of input, then it is

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**2. What are the basic conditions to avoid recursion? Explain Fibonacci series with recursion.**

**Ans:**

**Fibonacci numbers** – The Fibonacci numbers are defined by F0=0, F1=1, and for n ≥ 2, Fn = Fn- 1 + Fn-2. The first few numbers in the Fibonacci series is given 0, 1, 1, 2, 3, 5, 8, 13, 21, 34…

By this

**3. A. Briefly explains the four rotations in an AVL tree.**

**Ans:** The rotations can be classified as single rotations and double rotations.

**Single rotations**

Single rotations are the rotations performed to balance the AVL tree when a new node is added. Here a node is rotated only once so as to balance the tree. They are of two types.

**R-rotation –** The first

**SET-II**

**4. A. What are non-deterministic algorithms?**

**Ans:** An algorithm which defines every operation exclusively is called deterministic algorithm.

An algorithm where every operation may not have an exclusive result and there is a specified set of possibilities for every operation is called non– deterministic algorithms. Non–deterministic

**5. Explain the time complexity in Kruskal’s algorithm and the method of resolving it.**

**Ans: Description**

Kruskal’s algorithm finds a particular subset of the edges that are able to form a tree that contain all the nodes (vertices) without forming a cycle within the graph, but the total weight of the

**6. A. Explain the Floyd’s algorithm to find the shortest path.**

**Ans:** We can generate the distance matrix with an algorithm that is very similar to Warshall’s

algorithm. It is called Floyd’s algorithm, after its inventor R. Floyd. It is applicable to both undirected and directed weighted graphs pro