GOVT DEGREE COLLEGE KISHTWAR

Semester-III (CBCS) EXAMINATION 2020-21

BA/BSc (Computer Applications)

Course Code: UCATC-301 **Course Title:** Data and file structure using C language

Time : 3 hr **Max Marks**:80

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Note : Attempt any Four questions. Each question carry equal marks.

Q1:- What is complexity of an algorithm? Explain briefly best, average and worst case complexity of Linear Search Algorithm. What do you understand by rate of growth of an algorithm? What is Big-oh notation? Show that $f(x)=5x^6 + x -10 =O(x^6)$.

Q2:-Write Binary Search algorithm. Explain its complexity. Find the position of element 29 using binary search method in an array A = {11, 5, 21, 3, 29, 17, 2, 43}

Q3:-Explain Quick Sort algorithm with suitable example. Explain its worst case and average case complexity.

Q4:-Explain the following with examples:

a) Binary tree
b) Binary Search tree
c) Complete Binary tree
d) Types of tree traversing

Q5:- Do the following:

a) Difference between array and linked-list.
b) Difference between linear and non-linear data structure.
c) List operations performed on data structure.
d) What is recursion?

Q6:-What is Hashing? Explain various hashing methods. What is collision resolution?

Q7:-What is a linked list? Explain its types. Write algorithms for insertion and deletion in two-way linked list.

Q8:- Write a program in C for Bubble-Sort. Sort the following numbers in ascending order using Bubble sort. Given Numbers :348, 14, 614, 5381, 47