[This question paper contains 2 printed pages.]

Your Roll No.5004...

Sr. No. of Question Paper : 1911 **G**

Unique Paper Code : 3122611103

Name of the Paper : Programming Fundamentals

Name of the Course : **B. Tech. (IT and Mathematical Innovations)**

Semester : I

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. This question paper contains **six** questions, out of which any **five** are to be attempted. Each question carries equal marks.

1. Given an array arr[ ] and an integer K, where K is smaller than the size of the array. The task is to print the K^{th} smallest element and K^{th} largest element in the array. It is given that all array elements are distinct.

   For instance, when K = 3, and Input: N = 6, arr[ ] = {17 10 42 31 20 25}, the output is : 25. Which means, the 3rd smallest element in the given array is 25. Similarly find the largest element. (18)

P.T.O.

2. Explain the following functions with suitable example: (4.5×4=18)

(a) malloc()

(b) calloc()

(c) realloc()

(d) free()

3. What is Algorithm? Write its properties and types with suitable example. (18)

4. What are the parameter passing techniques in C? Explain with suitable examples. (18)

5. What are pointers? Explain their use in programming. Write a C program to insert an element at the end of a link list. Also write the code to delete the second element from the link list. (18)

6. Write a structure to store the *name, account_number* and *account_balance* of customers (more than 10) and store their information. Write a function to print the names of all the customers having *account_balance* less than ₹5000. Also write a function to add ₹1000 in the *account_balance* of all the customers having more than ₹50,000 in their account and then print the incremented value of their *account balance*. (18)