

Instructions

- a) Write Registration Number, Name & Mobile number on the Answer sheet.
- b) Write the Question and Answer on the given white sheets. Dont write anything on this question paper
- c) Write optimized programs which are logically correct
- d) Preferred programming language is Java.
- e) You can just write the required function and logic instead of complete program
- f) **Time : 60mins**

- 1) Write an optimized program to reverse the integer array with one loop !

Ex: Input : {1,2,3,4,5}

Output : {5,4,3,2,1}

- 2) Write an optimized program to find sum of the diagonal elements of a square matrix.
(Preferably with one loop)

Ex: Input : { 1,2,4,

20,5,7

23,9,7}

Output : 13

- 3) Write a program to print as follows given 'n' as input;

Ex: if n=5; it prints 5 rows as follows.

```

1
2      3
4      5      6
7      8      9      10
11     12     13     14     15

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- 4) Define data structure and addElement() function for a Binary search tree

Definition : A Binary search tree can have max. Two childs for any node. Left child element value will be <= root node value, and right child element value will be > root node value;

5) Given array of names, write a function to display the unique names and how many times they occurred ? Ex : Input : String [] names = {"ravi","raju","amit","bob","ravi","amit"}; Output : ravi -2; raju-1; amit-2; bob-1; Hint : In Java we can use any HashMap structure. It has Key and Value mapping for unique keys. It has methods to check ContainsKey(); get(Key);put(Key,Value) methods;

- 6) Write a function which takes two sorted arrays and return an array which is merge of the input arrays in the sorted order !

Ex : Input : a1={4,9,13,16,18}; a2={2,5,8,10,14,29};

Output : {2,4,5,8,9,10,13,14,16,18,29}