SE/CMPN/III CRem 24/5/2012
Data Structure & Files

70-p3-d-upq-FH KL12 B

Con. 3889-12. **GN–5300**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from Q. No. **2** to **7**.
(3) Assume **suitable** data wherever required but justify the **same**.

1. (a) What is Recursion ? Write a program to calculate factorial of a number using recursion. 10
(b) Explain linear and non-linear data structure with example. 5
(c) Write ADT for stack. Give application of Stack. 5

2. (a) Write a program to implement Insertion sort using Java. Show passes of Insertion sort for following input data : 5, 3, 2, 1, 4. 10
(b) Give different searching techniques. Write a program to implement Binary Search. 10

3. (a) Write a program in Java to copy content of a file to another file. 10
(b) Write a program in Java to sort n integer numbers using Quicksort. Show the steps to sort the given numbers : 10
25, 10, 7, 30, 15, 2, 96, 14.

4. (a) Explain different representation of graph. State advantages and disadvantages of each representation. 10
(b) What is the use of Huffman Encoding ? Apply and give Huffman code for each symbol in sentence "DATA STRUCTURE". 10

5. (a) Write a Java program to implement circular queue using array. 10
(b) Write a Java program to create a binary search tree. Show BST for following input : 10, 5, 4, 12, 15, 11, 3. 10

6. (a) What is the use of hashing ? Show hash table entries for the given dataset using Linear probing and quadratic probing : 12, 45, 67, 88, 27, 78, 20, 62, 36, 55. 10
(b) What are the advantages of Linked List over array ? Write a program in Java to implement stack using linked list. 10

7. Write short note on (any **two**) :— 20
(a) Tree traversal algorithm
(b) Graph traversal algorithm
(c) Priority queue.