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Total No. of Pages : 02

Total No. of Questions : 07

BCA (Sem.-2nd)

DATA STRUCTURES

Subject Code : BC-204 (2007 to 2010 Batches)

Paper ID : [B0208]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.

SECTION-A**I. Answer briefly :**

- a. What is the advantage of using doubly linked list?
- b. What do you understand by a generalized list?
- c. What is the need of garbage memory collection in case of dynamic memory allocations?
- d. What is the shortcoming of binary search tree?
- e. What do you understand by the time and space complexity of any algorithm?
- f. What is the complexity of selection sort?
- g. What does a top pointer of stack denote?
- h. What is the difference between sequential and linked representations?
- i. To compute shortest distance from Chandigarh to Mumbai, which algorithm will be most suitable? The problem statement will be represented using which data structure?
- j. State few applications of stacks.

SECTION-B

2. What do you understand by time and space complexity of a program? What is the Big O notation?
3. Write a program to calculate Fibonacci series using Recursion. What are the two major requirements for any program to be recursive?
4. Using manual transformation, write the following expressions received after conversions :
 - I. $* - ! PQRS$ (Convert to Infix)
 - II. $(P-Q) / R * S * F - R!S + D * G$ (Convert to Prefix)(! Denotes Exponential Operator)
5. What are the various operations possible on a link list? Explain with the help of an algorithm.
6. Suppose a sequence of numbers is given like:
23, 17, 25, 81, 55, 13, 58, 44. www.a2zpapers.com
How these numbers will be sorted in Insertion Sort? What will be the complexity of insertion sort for the above sequence?
7. What is a binary search tree? How is it represented in memory? Explain various applications of BST.