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Roll No. | | | | | | | | | | | | |

Total No. of Pages: 02
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B. Tech (Sem.-5th)

DATA STRUCTURES

Subject Code: BTCS-304
Paper ID: [A2102]

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATE:

1. Section –A, is Compulsory.
2. Attempt any four questions from Section-B.
3. Attempt any two questions from Section-C.

Section –A (10x2=20)

Q.1.

(a) Differentiate between linear and non –linear classification of data structure with example.

(b) What is header linked list? Explain

(c) What is deque? What is its use?

(d) Name the two main parameters upon which complexity of an algorithm depends.

(e) Differentiate between links and pointers.

(f) Construct a binary tree for the following expression (2x-3z+5) (3x-y+8).

(g) What is Hashing Scheme?

(h) How data structure is different from data base?

(i) What do you mean by storage allocation?

(j) Show the result of inserting 6,3,5,8,12,15,18,19,20,24 into an empty binary search tree.

Section –B (4x5=20)

Q.2. What do you mean by data structure? Explain different types of data structure with help of examples.

Q.3. Explain the concept of breadth first search for graph traversal with the help of example.

Q.4. Using bubble sort algorithm, find the number 'C' of comparisons and the number 'D' of interchanges which alphabetize the n=6 letters in PEOPLE.

Q.5. What is a graph? Explain the linked representation of graphs. List the applications of graphs.

Q.6. What is a heap? Discuss the various operations on heaps.

Section –C (2x10=20)

Q.7.(i) Explain the complexity of an algorithm. Compute the complexity of Binary search algorithm.

(ii) What do the terms LIFO and FIFO mean? Explain.

Q.8. Write a short note on the following:

(a) Height Balance tree

(b) Merge sort

(c) Sparse Matrices

(d) Prefix Infix Notations

Q.9. Discuss the algorithm used for the conversion of infix notation to postfix notation.