



A-1724
B. Sc. (I.T.) (Sem. III) Examination
March / April – 2015
Data Structures

Time : 3 Hours]

[Total Marks : 70

Instruction :

<p>नीचे दृशावेव निशानीवाणी विगतो उत्तरवही पर अवश्य कपवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : B. SC. (I.T.) (SEM. III)</p> <p>Name of the Subject : DATA STRUCTURES</p> <p>Subject Code No. : 1 7 2 4 Section No. (1, 2,.....): Nil</p>	<p>Seat No. : □ □ □ □ □ □</p> <p>Student's Signature</p>
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1 Answer the following questions in brief [Any Six] 18

1. What is binary tree? How it is different than general tree?
2. Write an algorithm to insert data element in input restricted DQ
3. What is zig-zig case in splay tree?
4. Create the expression tree for $C + B * D + L * F$
5. How to represent polynomial expression with linked list?
6. What is row major order of array? Explain with formulae
7. Search 34 with binary search for this list:
5, 23, 34, 56, 67, 78, 85

2 Answer the following questions in detail [Any Three] 18

1. Create an AVL tree and maintain the height after every operation
Insert 6,13,16,2,34,23,18,52,41,46
Delete 18
2. Write an algorithm to convert infix expression into postfix expression. Evaluate following postfix expression:
10, 25, 5, +, *, 10, /.
3. What is B+ tree? Create B+ tree for $n=3$ (pointers) and following values 13, 16, 15, 18, 25.
4. Explain hashing and hash file organization. What are the properties of good hash function? Explain hash function with example.

- 3** Answer the following questions [Any Six] **18**
1. What is the difference between primary index and secondary index ?
 2. Perform the radix sort on: 45, 67, 23, 33, 57, 86, 91, 27, 10
 3. What is time complexity? Give Big 0 notation for bubble, selection, merge and quick sort.
 4. Give the difference between stack and queue.
 5. What is primitive data structure?
 6. Write the logic for deleting a node by position number in doubly linked list with 1 variable.
 7. What is threaded binary tree representation?
- 4** Attempt any FOUR questions : **16**
1. What is max-heap tree? Construct max-heap tree for following data values 5, 35, 42, 54, 75, 24, 46, 7
 2. What is pre-order and in-order traversal of the binary tree?
 3. Write an algorithm to delete the last element from singly linked list.
 4. Perform the quick sort on following data elements
14, 35, 6, 31, 59, 7, 24, 7
 5. Differentiate array and linked list.
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