

(i) Printed Pages : 2

Roll No.

(ii) Questions : 9

Sub. Code :

0	9	3	2
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Exam. Code :

0	0	2	9
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Bachelor of Computer Applications 3rd Semester

(2122)

DATA STRUCTURES

Paper—BCA-16-305

Time Allowed : Three Hours]

[Maximum Marks : 65

Note :— (1) Attempt ONE question from each unit.

(2) Question No. 9 is compulsory question.

(3) All questions carry equal marks unless specified.

UNIT—A

1. (a) How multidimensional arrays are represented in memory? 6
- (b) Write and analyze recursive algorithm to find the factorial of a number. 7
2. Explain Quick sort algorithm as an application of stack. 13

UNIT—B

3. Write an algorithm to find the number NUM of non-zero elements in a linked list. 13
4. (a) What is priority queue ? Explain one-way list representation of priority queue. 7
- (b) Write various applications of queue in detail. 6

UNIT—C

5. (a) How trees are represented in memory ? 5
(b) Explain in-order and post-order traversal technique in detail. 8
6. (a) Write an algorithm to insert and search from a binary search tree. 7
(b) Explain various traversal techniques for Graphs. 6

UNIT—D

7. (a) What is Binary Search ? How is it different from Linear Search ? 6
(b) How does Selection sort work ? Write its algorithm with a suitable example. 7
8. (a) What is Insertion sort ? Write its algorithm and explain with suitable example. 7
(b) Write an algorithm for Merge Sort. 6

(Compulsory Question)

9. (i) Discuss various applications of Data Structure. 2
(ii) Differentiate between linear and non-linear data structures. 2
(iii) What are the advantages of linked list over arrays ? 2
(iv) Define garbage collection. 1
(v) Differentiate between Binary tree and Binary Search tree. 2
(vi) Calculate the complexity of Binary search algorithm. 2
(vii) Which sorting technique is best in terms of complexity ? Justify. 2