

F-40/2/110

10051/NJ

1. **Name of the Examination/Course** : B.Sc.(Honors in Mathematics) Semester-III
2. **Semester** : 3rd **Month**: December
3. **Subject**: Data Structure **Paper**: CS-305-A **Option**: NA
4. **Title of Paper**: B.Sc.(Honors in Mathematics) Semester-III
5. **Time Allowed**: 3 Hours **Maximum Marks**: 40
6. **Any Special Material to be supplied to the candidates** : NA

Section A

1. What do you mean by Data Structures? Explain.
2. What do you mean by array? How the elements of the array can be represented into the memory?
3. What is difference between array and linked list?
4. What do you mean by doubly linked list? How a node can be deleted from doubly linked list? Explain.

Section B

5. What is difference between the stack and queue? Explain the memory representation of stack.
6. Explain the various memory representations of tree data structure.
7. Compare linear search with binary search.
8. Explain the working of insertion sort. Also write and explain the algorithm for the same. What is complexity of insertion sort?

Section C

Q9.

- a. What is difference between linear and non-linear data structures?
- b. What are the applications of sparse array?
- c. What is structure of the node in two way linked list?
- d. Write down the applications of circular queue.
- e. Evaluate :
$$e = 4 - 2^4 + 8 \times 3 + 18 / 3 + 6$$
- f. What do you mean by path between the two nodes in the tree?
- g. Binary search is better than linear search. Do you agree? Justify shortly.
- h. What is difference between tree and graph data structure?
- i. What do you mean by Bog O notation?
- j. What is the application of sparse array?