

**Q.P. Code : 11225**

**Second Semester B.Sc. Degree Examination, May/June 2019**

*(CBCS Scheme)*

**Computer Science**

**DATA STRUCTURES**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to Candidates : Answers all the Sections.*

**SECTION - A**

I. Answer any **TEN** questions. Each question carries **2** marks : **(10 × 2 = 20)**

~~1.~~ What are primitive and non primitive data types? Give examples.

~~2.~~ Define String. How are they stored in memory?

3. Explain FLOOR and CEIL functions with examples.

~~4.~~ What is a 2D array? How is it represented in memory?

~~5.~~ Explain sparse matrix.

~~6.~~ Compare linear and binary search methods.

~~7.~~ What is a linked list? Explain the components with a diagram.

8. What is garbage collection?

~~9.~~ How do you access the top element of a stack?

~~10.~~ What is a priority queue? Name the types.

~~11.~~ Define direct graph and complete graph.

~~12.~~ Differentiate between General Tree and Binary Tree.

**SECTION - B**

II. Answer any **FIVE** questions. Each question carries **10** marks : **(5 × 10 = 50)**

~~13.~~ (a) Explain any two control structures which allows the flow of Execution of an algorithm with the syntax. **(6)**

(b) Explain any four string operations. **(4)**

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- ~~14~~ (a) Write a C program to implement Insertion sort. (6)  
(b) Write the algorithm for Bubble sort. (4)
15. (a) Explain the Binary search algorithm with an example. (6)  
(b) Explain the Towers of Hanoi Problem for 3 disks. (4)
- ~~16~~ (a) Write a C function to delete a node from the end of a linked list. (6)  
(b) Write a note on doubly linked list. (4)
- ~~17~~ (a) Write the algorithm to insert a node into sorted linked list. (5)  
(b) Write a program to implement push and pop operations in stack. (5)
18. (a) Write a program to convert an infix expression to postfix. (6)  
(b) Write the algorithm for Breadth First Search Method. (4)
- ~~19~~ (a) Write the algorithm to insert an element in the circular queue. (5)  
(b) Write a note on deque. (5)
20. (a) Explain the tree traversals with the traversal functions. (6)  
(b) What is a Binary Search Tree? How do you delete a node from Binary Search Tree? (4)