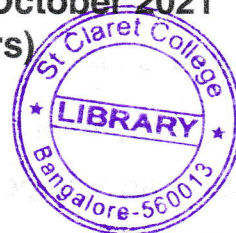




SG – 625

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II Semester B.C.A. Examination, September/October 2021  
(CBCS Scheme) (Fresh + Repeaters)  
(2014 – 15 and Onwards)  
COMPUTER SCIENCE  
BCA 203 : Data Structures



Time : 3 Hours

Max. Marks : 70

- Instructions :** 1) Section – A, answer **any 10** questions.  
2) Section – B, answer **any 5** questions.

SECTION – A

Answer **any 10** questions, **each** question carries **2** marks. (10×2=20)

1. Define data structure. 2
2. Mention different types of sorting techniques. 2
3. Define linked list. 2
4. What is a stack ? 2
5. Write about the representation of a linked list. 2
6. What is a sparse matrix ? 2
7. What is binary tree ? 2
8. Differentiate between non-terminal node and a leaf node. 2
9. Define binary search tree. 2
10. Mention any 2 applications of a linked list. 2
11. Define a priority queue. 2
12. What is directed graph ? Give an example. 2

SECTION – B

Answer **any five** questions, **each** question carries **10** marks. (5×10=50)

13. a) Explain linear search method with an example. 6  
b) Write an algorithm for selection sort. 4

P.T.O.



14. a) What are the advantages of a linked list ? 4  
 b) Write a C program to implement insertion sort. 6
15. a) Write a program to sort n elements using Bubble sort technique. 5  
 b) List the advantages and disadvantages of a binary search. 5
16. a) List the applications of a data structure. 6  
 b) Write a C program to find the factorial of a number using recursion. 4
17. Define a linked list. Explain different types of linked list with a neat diagram. 10
18. Write a menu driven C program to implement stack operations. 10
19. a) Define the following : 5  
 i) Graph  
 ii) Edge  
 iii) Vertex  
 iv) Null graph  
 v) Leaf node.  
 b) Explain DFS method of graph traversal. 5
20. a) Write a note on dynamic memory allocation. 5  
 b) Convert the following infix expression into its equivalent postfix. 5  
 $(a + b) * (m/n) + (x + y).$

