SG – 625
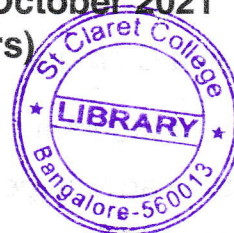
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II Semester B.C.A. Examination, September/October-2021
(CBCS Scheme) (Fresh + Repeaters)
(2014 – 15 and Onwards)
COMPUTER SCIENCE
BCA 203 : Data Structures

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

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SG – 625

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.
    $(a + b) * (m/n) + (x + y)$. — 5

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