B.M.S. COLLEGE FOR WOMEN, AUTONOMOUS
BENGALURU – 560004
SEMESTER END EXAMINATION – SEPTEMBER- 2023

B.Sc in Computer Science – 2nd Semester

DATA STRUCTURES
(NEP Scheme 2021-22 Onwards F+R)

Course code: CS2DSC02   **QP Code: 2016**
Duration: 2 ½ Hours   **Max. Marks: 60**

Instructions: 1. Answer any four questions from each part.
2. Answer all sections.

PART – A

I. Answer any TEN questions. Each question carries TWO Marks.   (10X2=20)

1. Mention different types of sorting techniques.
2. Define space and time complexity of an algorithm.
3. What is Hashing?
4. Differentiate between stacks and queue.
5. Define the terms: i) Graph   ii) Tree
6. What is directed graph? Give example.
7. Define recursion.
8. Mention the different types of tree traversal.
9. What is circular queue?
10. Mention the graph traversal methods.
11. Mention various types of linked list.
12. List different operations on binary tree.

PART – B

II. Answer any SIX questions, each carry FIVE Marks.   (6X5=30)

13. Explain linear search method with an example.
14. List the applications of data structure.
15. Illustrate asymptotic notations with examples.
16. Briefly explain infix, prefix and postfix expressions.
17. Convert the following infix expression to postfix using stack
    (A/B^C+D*E-A*C)
18. What do you mean by linked list? Write a function to insert a node at beginning of singly linked list.
19. Sort the following list using heap sort. 66,33,40,20,50,88,60,11,77,30
20. Given the following inorder and preorder traversal reconstruct a binary tree
    Inorder – D,G,B,E,A,F,I,C
    Preorder – A,B,D,E,H,C,F,I

PART – C

III.   Answer any ONE question, each carry TEN Marks.   (1X10=10)

21. Write the algorithm for binary search and explain it.
22. Write a menu driven C program to implement stack operations.
23. What is binary tree? Explain the representation of binary tree? Explain the different operation on a binary tree.

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