21BSC2C2CSL

B.Sc. II Semester Degree Examination, Sept./Oct. - 2024

COMPUTER SCIENCE

DSC3 : Data Structure using C

(NEP)

Time : 2 Hours   Maximum Marks : 60

SECTION - A

Answer the following sub-questions, each sub-question carries **one** mark.   **10x1=10**

1. (a) Define data structure.

    (b) What is Recursion ?

    (c) Write any two dynamic memory allocation methods.

    (d) Define Array. Write the classifications of array.

    (e) What is Stack ?

    (f) Expand LIFO and FIFO.

    (g) Define queue.

    (h) What is a root node ?

    (i) Write any two types of sorting techniques.

    (j) Define Binary Tree.

SECTION - B

Answer **any four** of the following questions, each question carries **five** marks.   **4x5=20**

2. Write the differences between static memory allocation and dynamic memory allocation.

3. Explain bubble sort technique with an example.

4. Write a note on linked lists and its types.

5. Write a short note on garbage collection.

6. Convert Infix to Postfix expression. $A*(B-C)/E+F$.

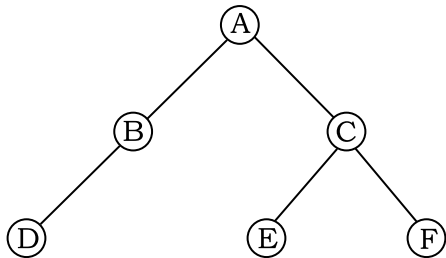7. Write the algorithms for PUSH and POP operations in a stack.

SECTION - C

Answer **any three** of the following questions. Each question carries **ten** marks.

3x10=30

8. Explain the classification of data structures with a neat diagram.

9. Explain quick sort technique with an example.

10. Explain different stack operations with an example.

11. Write an algorithm to add a new node at the beginning of a singly linked list.

12. Write preorder, in order and post order traversal for the following binary tree.

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