21BSC2C2CSL

B.Sc. II Semester (NEP) Degree Examination, September/October - 2022
COMPUTER SCIENCE
Data Structures using C

Time : 3 Hours   Maximum Marks : 60

SECTION - A

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

1. (a)   Define Primitive and Non-Primitive data structure.

(b)   What is Recursion ?

(c)   Define Array. Write the classification of arrays.

(d)   Define sparse matrix.

(e)   Write the structure of node in single linked list.

(f)   Mention the different types of linked lists.

(g)   Define Preorder Traversal.

(h)   Expand LIFO & FIFO.

(i)   List the different types of queues.

(j)   What is Binary tree ?

SECTION - B

Answer **any four** of the following questions, each question carries **five** marks.

4x5=20

2.   Explain the concept of Tower of Hanoi problem with a suitable example.

3.   Write an algorithm to search an element in an array using binary search.

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

5.   Explain the structure of circular queue with an example.

6.   Convert Infix to Postfix expression. $(A+B^\wedge D)/(E-F)*G$.

7.   Construct the Binary tree for the following.
IN ORDER : 9, 5, 1, 7, 2, 12, 8, 4, 3, 11

SECTION - C

Answer **any three** of the following questions, each question carries **10** marks.

3x10=30

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

9. Explain quick sort technique with an example.

10. Write an algorithm to insert node in single linked list.

11. Explain different operations of stack with an example.

12. Explain Binary tree traversal methods in Inorder and Postorder.

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