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SF—53—2022

FACULTY OF COMPUTER STUDIES

B.Sc. (CS) (Second Year) (Third Semester) EXAMINATION

MAY/JUNE, 2022

(CBCS/New Pattern)

COMPUTER SCIENCE

BCS-303

(Data Structure and Algorithms)

(Wednesday, 6-7-2022)   **Time : 2.00 p.m. to 5.45 p.m.**

Time— 3.45 *Hours*   *Maximum Marks*—75

N.B. :—   (*i*)   *All* questions are compulsory.

      (*ii*)   Figures to the right indicate full marks.

      (*iii*)   Assume suitable data, if necessary.

1.   Attempt any *five* of the following :   15

    (*a*)   What is algorithm complexity ?

    (*b*)   Arrays

    (*c*)   Linked list

    (*d*)   Tree

    (*e*)   Queue

    (*f*)   Stack

    (*g*)   Graph theory Terminology.

2.   Attempt any *three* of the following :   15

    (*a*)   Explain Basic Terminology.

    (*b*)   Write an algorithm for traversing linear array.

    (c)   Write two-way linked list.

    (d)   Write memory representation of stack.

    (e)   Explain priority queue.

3.   Attempt any *three* of the following :   15

    (a)   Write an algorithm for linear search method.

    (b)   Write an algorithm to search an ITEM in sorted linked list.

    (c)   Write operations on stack.

    (d)   Write an algorithm to delete ITEM from Queue.

    (e)   What is tree ? Explain binary tree.

4.   Attempt any *three* of the following :   15

    (a)   Write linked representation of binary tree.

    (b)   Explain D-queue.

    (c)   Explain recursion with fibonacci sequence example.

    (d)   Write an algorithm to insert an ITEM after given mode.

    (e)   Write bubble sort method.

5.   Attempt any *three* of the following :   15

    (a)   Write linear data structure.

    (b)   Explain memory representation of linear array.

    (c)   Write an algorithm to delete a node following given node.

    (d)   Explain adjacency matrix.

    (e)   Translate infix into postfix A + (B * C − (D/E $\uparrow$ F) * G) + H.