1058
B.A./B.Sc. (General) Fourth Semester
Computer Science
CS-08: Data Structure

Time allowed: 3 Hours   Max. Marks: 30

NOTE: Attempt _five_ questions in all, including Question No. IX (Unit-V) which is compulsory and selecting one question each from Unit I -IV.

x-x-x

UNIT – I

I.   What is Data Structure^0 What are the various operations that can be performed on different Data Structures?   (6)

II.   a) What is an array? Explain various types of an array.

       b) Explain various operations implemented on stack?   (2x3)

UNIT – II

III.   How linked list is implemented and represented in memory?   (6)

IV.   a) What are the various operations performed on Queue.

       b) What do you mean by queue data structure? Explain various applications of queues.   (3,3)

UNIT – III

V.   What is binary search tree? Explain all traversal algorithms of a tree.   (6)

VI.   Define the following terms:-
       a) Adjacent vertex
       b) Path
       c) Degree of vertex
       d) Complete graph
       e) Connected graph
       f) Multigraph   (6x1)

UNIT – IV

VII.   Write an algorithm that performs binary search.   (6)

VIII. Write an algorithm for sorting numbers using insertion sort.   (6)

UNIT – V

IX.   Explain the following:-
       a) Difference between linear data structure and non linear data structure
       b) Discuss the complexity of binary search
       c) Applications of stacks
       d) What are the necessary conditions for binary search?   (4x1½)

x-x-x