Exam.Code:0929
Sub. Code: 6914

1128
B.E. (Electronics and Communication Engineering)
Fifth Semester
EC-507: Data Structure and Algorithms

Time allowed: 3 Hours   Max. Marks: 50

NOTE: *Attempt* <u>five</u> *questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I.   Attempt the following:-

    a) Differentiate between link and pointer with help of an example.

    b) Describe complexity and space time trade off of algorithms with an example.

    c) What are the various factors on which choice of data structure depends?

    d) Define a queue and a deque.

    e) What is garbage collection?   (5x2)

UNIT – I

II.   a) Evaluate the" following postfix expression (P) and give algorithm for the same.

        P: 12,7,3. -./. 2.1.5.+.* +

    b) Write algorithms to insert and delete an element from a queue.   (5,5)

III. a) What is a linked list^0 Write an algorithm to insert and delete a node in singly linked list.

    b) What is a stack? Why it is known as LIFO? Write algorithms to push, pop, peep and change operations on stack.   (5,5)

IV.   Suppose S is the following list of 14 alphabetic characters:

DATASTRUCTURES

The characters in S are to be sorted alphabetically. Use the quick sort algorithm to find the final position of the first character D and give the algorithm for the same.
(10)

UNIT – II

V.   a) Compare and contrast DFS and BFS using suitable examples.

    b) Explain merge sort and radix sort technique in detail.   (5,5)

VI.   What is a binary search tree? Write an algorithm to insert and delete an element into a binary search tree and explain it with a suitable example.   (10)

VII. a) Write a short note on threaded binary tree.

b) What is Hashing? Explain different hash function methods in detail.   (5,5)

x-x-x