Exam.Code:0929
Sub. Code: 6914

1079

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

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five 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) Discuss the time complexity of an algorithm using O notation.

b) Differentiate between queue and deque.

c) Why are binary search tree retrievals more efficient than sequential list retrievals.

d) What are the various factors on which choice of data structure depends.

e) What is a doubly linked list? (5x2)

UNIT – I

II. a) Using suitable examples, explain the various operations supported by arrays.

b) Write an algorithm to convert the following infix expression to postfix expression

Q: ((A + B) * D) ↑ (E - F)
Also, give the algorithm for the same. (2x5)

III. a) Illustrate the various operations performed on doubly linked list using suitable examples.

b) Write and explain quick sort algorithm in detail with suitable example. (2x5)

IV. a) Write algorithms to insert and delete kth element in a queue.

b) Explain in detail various operations performed on a stack. (2x5)

UNIT – II

V. a) Write a procedure to explain the process of Breadth First Traversal of an undirected graph.

b) Explain minimum cost spanning tree. Discuss its advantages with an example. (2x5)

VI. a) Define a hash function. Discuss using suitable examples some methods of obtaining hash functions.

b) Explain heap sort in detail. (2x5)

P.T.O.

VII. Write short notes on the following:-

a) Threaded Binary trees

b) Merge Sort (2x5)

x-x-x