

: 6913

Exam.Code:0929
Sub. Code: 6914

1129
B.E. (Electronics and Communication Engineering)
Fifth Semester
EC-507: Data Structure and Algorithms

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
 - a) What is the significance of Garbage Collection?
 - b) How is a B-Tree different from binary tree?
 - c) What are the applications of binary heap?
 - d) What is the postfix equivalent of following expression: *• - A B - C B
 - e) What is a spanning tree? (5x2)

UNIT - I

- II. What is a two way linked list? Write an algorithm to (a) insert an element at the end of two way linked list (b) delete the third element of two way linked list. (10)
- III. a) What is a data structure? Differentiate between linear and non-linear data structures using examples.
- b) Elaborate the method of calculating time and space complexity of an algorithm with an example. (10)
- IV. a) Distinguish between stacks and queues.
- b) Write an algorithm to convert infix expression to postfix expression.
- c) Explain the method of calculating the address of an element in an array A when the base address is given. (4,4,2)

UNIT - II

- V. Write an algorithm to search a given element from an array using binary search. Demonstrate the different steps of binary search using following array: 77, 44, 11, 89, 65, 32, 98, 81, 92. Which is more efficient- binary search or sequential search and Why? (10)

given

ending

2x5)

single
quence

w can
2x5)

2x5)

(2)

- VI. a) Explain the following terms with respect to Graphs:-
i) Outdegree of a node
ii) Indegree of a node
iii) Weighted graph
- b) Discuss breadth first traversal and depth first traversal with example. (6,4)
- VII. a) What are binary trees? How are binary trees represented using arrays and-linked lists?
- b) How do you determine the balance factor of an AVL tree? What are the benefits of using AVL trees? (6,4)

x-x-x

Time
NOTI

I.

II.

III.

IV.