



Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : 42496

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Second/Third Semester

Electrical and Electronics Engineering

EE 2204 – DATA STRUCTURES AND ALGORITHMS

(Common to : Electronics and Instrumentation Engineering and Instrumentation and Control Engineering)

(Regulations 2008)

(Also Common to : PTEE 2204 – Data Structures and Algorithms for B.E.

(Part-time) – Third Semester – EEE – Regulations 2009)

Time : Three Hours

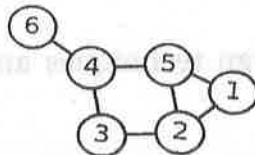
Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. List the advantages of implementing list using linking list over arrays.
2. Define an abstract data type.
3. What is a binary search tree ?
4. Write a function for preorder traversal of a binary tree.
5. Give examples for non-linear data structures.
6. Define hashing.
7. Write down the adjacency matrix of the graph shown below :



8. What are the applications of minimum spanning tree algorithm ?
9. Give some examples of the use of greedy algorithm.
10. How divide and conquer technique works ?



PART – B

(5×16=80 Marks)

11. a) Write the procedure to add and multiply two polynomials using arrays. (16)

(OR)

b) Write down the algorithm for evaluating a postfix expression using stack. Show the use of stacks in evaluating the expression $6523 + 8^* + 3+^*$. (16)

12. a) Write a function to perform the following operations in a binary search tree.

i) Insertion

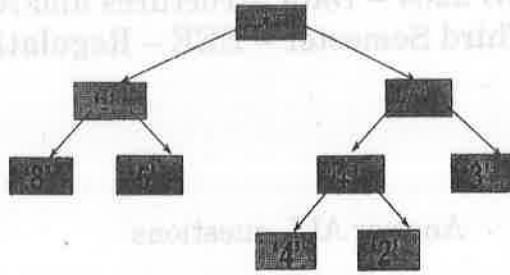
ii) Search.

(16)

(OR)

b) i) Write a routine to find the minimum value in a binary search tree using recursive function. (4)

ii) What is an expression tree ? Write down the infix, postfix and prefix expression from the given expression tree. (12)



13. a) i) Suppose we start with an empty B-tree and keys are added in the following order : 1 12 8 2 25 6 14 28 17 7 52 16 48 68 3 26 29 53 55 45. Construct a B-tree of order 5. (13)

ii) Define an AVL tree. (3)

(OR)

b) i) What are the properties of binary heap ? Write the algorithm for array implementation of constructing a binary heap. Give an example. (8)

ii) Construct the hash table for the data : 76, 93, 40, 47, 10, 55. Use linear hashing for the collision strategies. Assume the table size as 7. (8)

14. a) Explain Prim's algorithm for finding minimum spanning tree with an example. (16)

(OR)

b) Write down the pseudo code for topological sorting algorithm and illustrate the same with an example. (16)

15. a) Name any two algorithm design techniques and present an outline of the same. (16)

(OR)

b) Write down the recursive way of finding the Fibonacci terms and draw the trace of the recursive calculation of Fibonacci numbers. Why recursive algorithm is inefficient ? (16)