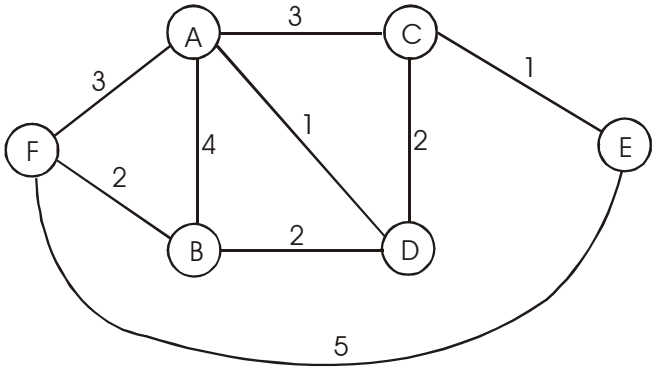
(c) What is spanning tree? Find the minimum cost of the following tree and draw its spanning tree



Printed Pages : 4

194402

NBC202

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 194402

Roll No.

MCA-DUAL DEGREE
(SEM. II) THEORY EXAM. 2014-15
DATA STRUCTURES USING C

Time : 3 Hours] [Total Marks : 100

Note : Attempt questions as indicated.

Q1. Attempt any ***four*** parts of the following : 5x4=20

(a) Differentiate between iteration and recursion using suitable example.

(b) Define algorithm. What are the criteria that every algorithm must satisfy? Write algorithm to find second largest value in the list.

(c) What is a data type? Find the difference between primitive, non-primitive, abstract and polymorphic data types.

(d) What is stack? What are its applications? Reverse the string with the help of stack.

(e) Write an algorithm to convert in the infix expression to postfix expression.

Q2. Attempt any ***four*** parts of the following : 5x4=20

(a) Write a function to find transpose of matrix.

(b) Distinguish between static memory allocation and dynamic memory allocation.

(c) Write an algorithm to evaluate a postfix expression.

(d) Write the sequential search and binary search algorithm. Compare both of the algorithms.

(e) Delete duplicate value from a given array.

Q3. Attempt any ***two*** parts of the following : 10x2=20

(a) Write a program of binary search. Analyze its running time.

(b) What is tree data structure? Explain different ways to traverse a tree.

(c) Explain the significance of threaded binary tree.

Q4. Attempt any ***two*** parts of the following : 10x2=20

(a) Write the quick sort algorithm.

(b) Write a program in C to sort 100 key numbers using bubble sort procedure. Discuss the worst time complexity of the algorithm.

(c) Define Heap. Write an algorithm to sort *n* elements using heap.

Q5. Attempt any ***two*** parts of the following : 10x2=20

(a) Explain depth first search traversal algorithm of a graph.

(b) Explain prim's algorithm to find minimum – cost spanning tree.