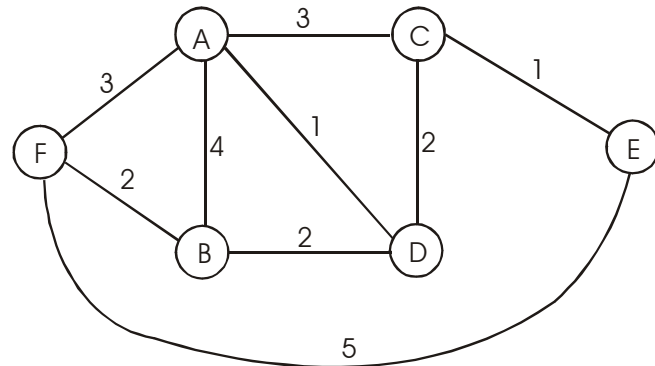


- (c) What is spanning tree? Find the minimum cost of the following tree and draw its spanning tree



Printed Pages : 4



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 : $5 \times 4 = 20$

- (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 : $10 \times 2 = 20$

- (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 : $10 \times 2 = 20$

- (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 : $10 \times 2 = 20$

- (a) Explain depth first search traversal algorithm of a graph.
- (b) Explain prim's algorithm to find minimum – cost spanning tree.