a) What is spanning tree define?

b) Define Doubly linked list.

c) Define In-order, Pre-order and Post-order traversal.

OR

Derive an AVL tree, arrange them is alphabetical order :

mar, nov, may, aug, apr, jan, dec, jul, feb, jun, oct, sep

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Total No. of Questions :7] *[Total No. of Printed Pages : 4*

Roll No .....

CS-113/IT-111

B.E. (All Branches), I Year II Semester

Examination, June 2016

Choice Based Credit System (CBCS)

Data Structure - I

Time : Three Hours

Maximum Marks: 60

Note: i) Attempt any five questions

ii) All questions carry equal marks.

1. a) What is the time complexity of quick sort in different cases?

b) Why do we analyze the algorithm, explain in brief.

c) What is Recursion? Write a recursive algorithm for Fibonacci series?

OR

Write a program or algorithm to add an element in linked list.

2. a) Define Binary Search.

b) Differentiate between Array and Linked list.

c) How arrays are represented in computer memory? Derive the formula to calculate address of an element in given array if it is represented in row major order.

OR

Write a program or an algorithm to check whether a given string is palindrome or Not.

3. a) Write a pseudocode for PUSH operation of a stack.

   b) Write the postfix expression of :

   $A + B * (C - D)/F$

   c) Define Priority queue and give its applications.

OR

Explain the Tower Hanoi problem. How it is related with stack? Give the solution of this problem.

4. a) What is Generalized Tree?

   b) Explain double link list?

   c) What do you mean by Path and Circuit in graph explain with an example?

OR

What is Binary Search Tree? Construct the Binary search tree :

50, 72, 96, 107, 26, 12, 11, 92, 10, 25, 51, 16, 17, 95

  Contd...

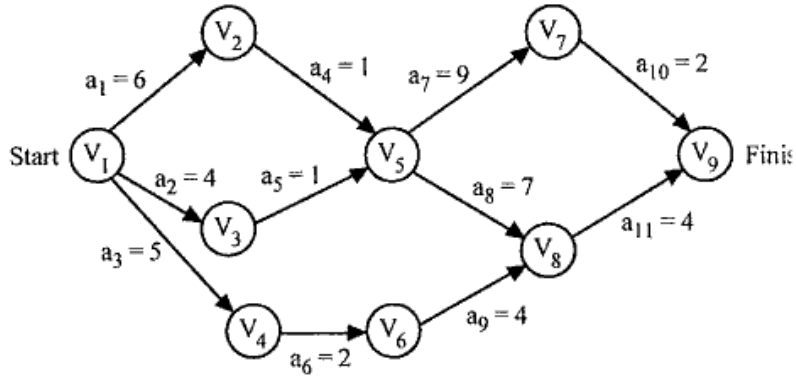
5. a) Explain Bubble Sort.

   b) Define graph with example.

   c) Compare DFS with BFS with its advantages an disadvantages.

OR

Find the shortest path from start to finish using Dijkstra algorithm.



6. a) Define complete binary tree.

   b) What are the way to represent a graph in compute memory?

   c) Explain Pointer and Dynamic memory allocation.

OR

Explain Heap Sort. Write steps to be followed to arrange th following list of elements using heap sort in ascending orde 44, 22, 76, 12,65, 55, 32, 87, 89.

  PT