

**V.V.M'S Shree Damodar College of Commerce & Economics,
Margao-Goa**
F.Y.B.C.A, SEM II, END SEMESTER EXAMINATION, MAY 2016 *Supplementary*
DATA STRUCTURES, BCA-201

Duration: 2 Hours

Total Marks: 50

- Instructions:**
- 1) All Questions are Compulsory.
 - 2) Figures to the right indicate Full Marks.
 - 3) Write Every Question on Fresh page.

Q1] Answer the Following draw diagrams wherever required (2mks x 5 =10 mks)

- a) When is a tree called a Binary Search Tree.
- b) Explain Doubly Circular Linked List?
- c) Write Preorder Traversal algorithm and preorder Traversal for tree structure given below in fig a.
- d) For given fig below i) Give the degree of node 10.
ii) name nodes that constitutes Left Subtree.
- e) Explain Tree Representation of the tree structure given below using Linked List .

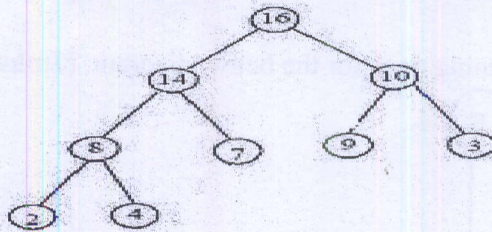


Fig a

Q2] Answer the Following .

- a) What is a Data Structure? Name the Linear Data structures. (2mks)
- b) Write the Algorithm of Selection Sort. (3 mks)
- c) For given input data Set explain how Binary Search will be executed to search value 90.
Data set: 4,17, 25, 80 , 90, 100 (5 mks)

Q3] Answer the Following .

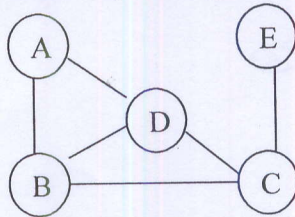
- a) Explain the concept of Circular Queues. (2mks)
- b) Explain why Linked List is preferred over Array. (3 mks)
- c) Write algorithm to implement following operation to Linked List (5 mks)
- i) Delete a node at Front and ii) Add a node in Between

Q4] Answer the Following .

- a) What is an Expression tree ?For the given expression draw Expression tree. (2mks)
- $y + z + m * (m - j) / k$
- b) Construct maximum heap tree for the given inputs (3 mks)
- 20, 4, 33, 78, 25, 60, 90
- Specify which type is the above drawn tree and why?
- c) Construct Binary Search tree on data set given below. (5 mks)
- Data Set : 25,10,44,10,90, 43,1
- Is the BST drawn a Complete Binary Tree. Justify .

Q5] Answer the Following.

- a) What is a Spanning Tree? Draw any two Spanning trees for the below diagram. (2mks)



- b) What is Adjacency Matrix. Give Adjacency Matrix representation for the above figure. (3 mks)
- c) Explain the following terms. (5 mks)
- i) Breadth First Search Traversal
- ii) Cyclic Graph
- iii) Sorting using Linear Search.
- iv) Strictly Binary Tree
- v) Ancestral node of a Tree
