7. (a) What is bina arch tree? What are the condition lied on a binary tree to obtain a b search tree? Present an algorithm construct a binary search tree discuss it using a suitable exan [8]

(b) What do y mean by preorder traversal of tree? Discuss an algorithm fo order traversal of a binary tree al ith an example. [8]

U

8. (a) Write functio t insert an edge into an undirecte aph represent using an adjacency ix. [8]

(b) Draw a direct aph with five vertices and seven e Exactly one of the edges should loop, and should not have any mu dges. [8]

9. (a) Write a prog at sorts a given list of numbers u ubble sort. [8]

(b) What is mer t ? Write algorithms for merge so l derive its run time explicitly. [8]

Roll No. .....

67071

M.C.A. 2nd Sem.
(with new notes - M.M. 80 w.e.f. May, 2013)
Examination-May, 2016

Data Structure (New)

Paper-MCA-201

Time : 3 hours ***Max. Marks : 80***

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

Note : Question No. **1** is **compulsory**. Attempt **four** more questions, selecting **one** question from each unit.

[8×2=16]

1. (a) What is a data structure? What is the need of data structure ?

(b) Explain the difference between stack and queue.

(c) Describe the concept of polish notation.

(d) Explain the us drawbacks of array.

(e) What is the n r a linked list? On what account ed lists are better than arrays?

(f) What is link st? How can you represent a lin st in memory?

(g) Define binary ull binary tree and strictly binary

(h) Derive the tim plexity of selection sort.

Un

2. (a) What are step can be suggested for developing gorithm? Consider a suitable sc and develop an algorithm for ng developing the algorithm. [8]

(b) What are tl ntrol structures? Explain the equence control structures wit help of examples. [8]

3. (a) Briefly describ notation of : [8]

(i) The compl of an algorithm.

(ii) The spa me trade off of algorithm

(b) What are the characteristics possessed by an algorithm? [8]

Unit-II

4. (a) Write an algorithm for merging of two array. [8]

(b) Write a program that evaluates an expression represented in postfix form. [8]

5. (a) Find out the complexity of binary search. Compare its time complexity with linear search. [8]

(b) What do you understand by a queue? Write algorithm for inserting and deleting of a data element from the queue. [8]

Unit-III

6. (a) What is a doubly linked list ? Write program/algorithm for showing the following operation on a doubly linked list. [9]

(i) Create

(ii) Insert

(iii) Delete

(b) Implement a stack (LIFO) using singly linked list. [7]