7. (a) Explain E ' tree with the help of examples. cuss the properties of binary tre t need to be considered. (8)

(b) What do y nean by tree traversal ? What kind perations are possible on a node a binary tree ? Give an a hm for inorder traversal of a bina ee. Taking an example, discuss the binary tree can be versed using inorder traversal. (8)

T-IV

8. (a) What is m by quick sort ? What are the adva /disadvantages of quick sort over sort ? (8)

(b) Draw . di graph with five vertices and se es. Exactly one of the edge sho a loop, and should not have any ple edges. (8)

9. (a) Write a pr n that sorts a given list of numbe ng bubble sort. (8)

(b) Draw an rected graph with five edges and vertices. The vertices should b lled vl, v2, v3, v4 and there st be a path of length three from v4. (8)

Roll No. .....

67071

M.C.A. 2nd Semester (with new notes) M.M. 80 w.e.f. May, 2013

Examination–May, 2017

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 : Attempt **five** questions in all. Question No.1 is **compulsory** and attempt **four** more questions by selecting **one** question from each unit. All questions carry equal marks.

(2×8=16)

1. (a) Define the term 'time complexity'. How can the time complexity of a given algorithm be found ?

(b) What are the user defined data structures ? Give some examples.

(c) How can ing be stored in an array ?

(d) Explain erflow and underflow conditio a stack with examples.

(e) What is need for a linked list ? On what a t, linked lists are better than arr

(f) What is ee? Discuss why definition of tree i ursive. Why is it said to be non-line

(g) What is difference between bubble sort and ction sort ?

(h) What is nt by sorting ? What are the type orting ?

NIT-I

2. (a) What he steps that can be suggest developing an algorithm ? Conside suitable scenario and develop algorithm for solving the problem plain each step while develop e algorithm. (6)

(b) Write a orithm that sorts a given list of n rs in ascending order. (6)

(c) Differen between linear and non-linear d ructures. Explain with the help of ples. (4)

3. (a) Write an algorithm that determines whether a number is even or odd. (8)

(b) What are control structures ? Explain the sequence control structures with the help of examples. (8)

UNIT-II

4. (a) What do you understand by a queue ? Write an algorithm for inserting and deleting of a data element from the queue. (12)

(b) Explain prefix, infix and postfix expression with examples. (4)

5. (a) Differentiate between linear queue and circular queue. Which one is better and why ? (8)

(b) Write a program that takes a sparse matrix A and find its transpose A and display it. (8)

UNIT-III

6. (a) What are the advantages of doubly linked list over singly linked list ? (8)

(b) Write an algorithm to search an element from a given linear linked list. (8)