Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University), Comibatore-641 043

Master's Degree Examination- November 2018
I Semester

Class: I M.C.A. Max. Marks: 60
Major: Computer Applications Time: 3 Hours

17MCAC03 Data and File Structures

PART – A (10 * 0.5 = 5 marks)
Choose the correct answer

1) The time factor when determining the efficiency of algorithm is measured by_____.
   a) counting microseconds
   b) counting the number of key operations
   c) counting the number of statements
   d) counting the kilobytes of algorithm

2) A.A. Markov was a _____.
   a) specialist in string b) computer scientist
   c) Russian Mathematician d) Greek Mathematician

3) abc*d/ + is an expression of type _____.
   a) infix b) prefix c) postfix d) normal

4) Queues are known as _____ lists.
   a) LIFO b) FIFO c) TOP d) BOTTOM

5) A linear list in which each node has pointers to point to the predecessor and successors nodes is called as _____.
   a) singly linked list b) circular linked list
   c) doubly linked list d) linear linked list

6) Each node in singly linked list has _____fields.
   a) 2 b) 3 c) 1 d) 4

7) The number of sub trees of a node is called its_____
   a) Terminal b) Forest c) Level d) Degree

8) In a binary tree, certain null entries are replaced by special pointers which point to nodes higher in the tree for efficiency. These special pointers are called _____.
   a) leaf b) branch c) path d) thread

9) A _____ is a collection of records, each record having one or more fields.
   a) File b) Tree c) Data Item d) Structure

10) Partitioning of a key into a number of part, each of which has same length is called _____.
   a) digit analysis b) length dependent method
   c) folding method d) mid square method

PART – B (5 *4 =20)

Answer all the Questions

Answer should not exceed 200 words or one page

11) a) Explain the concept of primitive data structures.

(or)

b) Define the term "String". What are the various operations that can be performed on strings? Give examples.

12) a) Illustrate the simulation of queue.

(or)

b) What is priority queue? How to implement a priority queue?

13) a) Justify the advantages of circular linked list.

(or)

b) Compare singly and doubly linked list.

14) a) Illustrate how to convert general tree into binary tree.

(or)

b) Explain the structure of Symbol Table.

15) a) Discuss the features of index techniques.

(or)

b) How do collisions happen during hashing? Explain the different techniques resolving of collision.

PART – C (5 *7 =35)

Answer all the Questions

Answer should not exceed 600 words or three pages

16) a) How do you find the complexity of an algorithm? What is the relation between the time and space complexities of an algorithm? Justify your answer with an example.

(or)

b) What are the methods of representation of string? Explain with examples.

17) a) What is a Stack? What are the basic operations on stack? Describe.

(or)

b) Write a procedure to convert infix expression into postfix expression and explain it with example.

18) a) Write a procedure to insert and delete an element in a singly linked list.

(or)

b) Write a procedure to add two polynomials using singly linked list and explain it.

19) a) Explain the various operations performed on a binary tree.

(or)

b) Discuss the various representations of Binary Tree.

20) a) Compare Sequential, Hashing and Indexed file organization.

(or)

b) What are external storage devices? Explain any two of them.

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