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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022 ONLY)

22UIT205

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY 2023

B.Sc. - IT **MAXIMUM MARKS: 50**

II SEMESTER **TIME : 3 HOURS**

PART – III
DATA STRUCTURES

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

1. _____ function is used to allocate a block of memory
   a) free b) calloc c) malloc d) realloc

2. A _____ is an ordered list with the restriction that elements are added or deleted from only one end of the list termed top of stack.
   a) Queue b) Linked List c) Array d) Stack

3. In Queue, deletion of an element can take place at only one end called ____
   a) Front b) Back c) Rear d) First

4. A _____ is a tree data structure in which each parent node can have at most two children
   a) Tree b) Binary Tree c) Nodes d) Forest

5. A _____ is a data structure that is used to represent a Relational Data
   a) Graph b) Queue c) Tree d) Linked List

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2) (Qn.No.6-10)

6. Define an Array.
7. What is the use of the Push() function in stacks?
8. What is meant by Queue?
9. What is meant by Binary Search?
10. What are the two methods of sorting ?

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Explain the Algorithms for Insertion and Deletion of Array elements

(OR)

b) Describe the about Doubly Linked List in detail.

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12. a) Write a note on Stack as an Abstract Data Type.

(OR)

c) Describe the role of stack in implementing recursive function.

13. a) Narrate in detail about Circular Queues

(OR)

d) Demonstrate Priority Queues with example.

14. a) What are the Properties of Binary Trees? Explain

(OR)

b) Describe the Insertion and deletion Operations in Binary Search Trees

15. a) Demonstrate Bubble sort algorithm with example.

(OR)

b) Write a note one Hash Functions.

SECTION – C (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

16. a) Discuss the concept of Arrays in C.

(OR)

b) Summarize in detail the basic operations of Linked List.

17. a) Explain the representation of Stack using Arrays .

(OR)

b) Discuss in detail the following applications of Stack

i. Polish Notation - 2 Marks

ii. Conversion of Infix to Postfix Notation - 3 Marks

18. a) Summarize in detail the representations of Queue.

(OR)

b) Discuss the Double ended Queues (Dequeue) and its representation.

19. a) List the Types of Trees and explain them in detail.

(OR)

b) What is Binary Search? Explain with example.

20. a) Discuss the Traversal on Graphs in detail.

(OR)

b) Explain the steps of Quick Sort Algorithm. Give example.

ETHICAL PAPER

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