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

22UDA102

REG.NO

NGM COLLEGE (AUTONOMOUS) POLLACHI

END-OF-SEMESTER EXAMINATIONS: DECEMBER- 2022

B. Sc Computer Science with Data Analytics **MAXIMUM MARKS: 50**

I SEMESTER **TIME: 3 HOURS**

PART - III

DATA STRUCTURES AND ALGORITHMS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. _____is the strategy used in Stacks?
   a. LILO b. FIFO c. FILO d. LIFO

2. _____is a collection of data and links
   a. Links b. Node c. List d. Item

3. The children of the same parent are called _____.
   a. Sibiling b. leaf. c. child d. subtree

4. _____ is a collision resolution technique that puts all elements that hash to the same slot in a linked list.
   a) chaining b) open addressing
   c) closed addressing d) hashing

5. _____ is a collection of records where each record consists of one or more fields.
   a) file b) record c) storage d) data

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Define Queue
7. Explain linked list.
8. Define graphs.
9. List any two types of sorting.
10. What is merge sort?

SECTION – B (5 X 3 = 15 MARKS)

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

(Qn. No. 11 to 15 Questions for Short Answers with internal choices) (K3)

11. a) List the various types of array with suitable example.

(OR)

b) Describe the Queue operations with neat diagram.

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12. a)Compare singly linked with double linked list.

(OR)

b) Describe the Circular Linked List with neat example. .

13. a) Explain (i) Tree (ii)Binary Tree.

(OR)

b) Sketch neatly Height Balanced tree and explain it.

14. a) Examine K-way merge sort with example

(OR)

b) Show how to resolve collision by open addressing.

15. a) Describe the shell sort and Selection sort with example

(OR)

b) Examine how index techniques are used in files.

SECTION – C (5 X 5 = 25 MARKS)

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

(Qn. No. 16 to 20 Questions for Long Answers with internal choices (K4 (Or) K5)

16. a) Evaluate the concept of Sparse matrix using Array and linked list representations.

(OR)

b) Examine in detail about Stack operations using linked list.

17. a) Discuss in detail singly linked list and its operations with an example

(OR)

b) Describe the polynomial addition using linked list with an example

18. a)Show how insertion and deletion is performed in Threaded Binary tree

(OR)

b) Discuss the traversal operations performed over Binary Search Trees.

19. a) Summarize the dynamic Tree table with neat relevant example. .

(OR)

b) Evaluate the various types of hash function with an example.

20. a) Discuss quick sort with an example.

(OR)

b) Examine Heap sort with a suitable example.

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ETHICAL PAPER