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(FOR THE CANDIDATES ADMITTED **24UDA205**

DURING THE ACADEMIC YEAR 2024 ONLY) **REG.NO. :**

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

END-OF-SEMESTER EXAMINATIONS : MAY 2025

BSC CS WITH DA(SF) **MAXIMUM MARKS: 75**

SEMESTER-II **TIME : 3 HOURS**

PART - III

24UDA205-DATA STRUCTURES

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. _____ data structure is used for implementing recursion.

   a) Stack b) Queue c) List d) Array

2. What is the value of the postfix expression 6 3 2 4 + – *?

   a) 74 b) -18 c) 22 d) 40

3. The essential condition which is checked before insertion in a linked queue is_____

   a) Underflow b) Overflow c) Front value d) Rear value

4. The number of edges from the node to the deepest leaf is called _____ of the tree.

   a) Height b) Depth c) Length d) Width

5. Merge sort uses which of the following method to implement sorting?

   a) selection b) exchanging c) merging d) partitioning

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

6. Define Queue.
7. Which data structure do we use for testing a palindrome?
8. What is binary Search tree?
9. Define key.
10. What is the worst case complexity of bubble sort?

SECTION – B (5 X 5 = 25 MARKS)

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

11. a) Write down the function to insert an element into a queue, in which the queue is implemented as an array.

    (OR)

    b) Clarify how to evaluate arithmetic expressions using stacks

12. a) Discuss on Doubly Linked List with an example.

    (OR)

    b) Explain the Operations of Linked Stacks and Linked Queues

Ethical Paper

(CONT…2)

13. a)Write the Definition and Basic Terminologies of trees.

(OR)

b)Discuss threaded binary tree. Write an algorithm for inserting a node in a threaded binary tree.

14. a)List the advantages of using modulo arithmetic for building hash functions.

(OR)

b)Compare the merits and demerits of a heap file with that of a sequential file organization.

15. a)Implicate the principle behind interpolation search.

(OR)

b)Explicate Insertion sort with example.

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K4 (Or) K5)

16. a)Elucidate Stack .What are the various Operations performed on the Stack?

(OR)

b)Give explanation on circular queue and its implementation

17. a)Explain the insertion operation in linked list. How are nodes are inserted after a specified node?

(OR)

b)What are the applications of linked list in dynamic storage management?

18. a)Interpret the tree traversal techniques with an example.

(OR)

b)Enlighten the various representations of graph with example in detail?

19. a)Comment on the search operation for a key K in a list L represented as
(i) sequential list (ii) A chained hash table and (iii) linear probed hash table

(OR)

b)Explain and give examples for (i) super key (ii) primary key (iii) secondary key (iv) alternate key

20. a)Describe Binary Search. List the advantages of binary search over sequential search.

(OR)

b) Discuss Quick sort with example.

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