FUNDAMENTALS OF DATA STRUCTURES

Question Bank for TEST IA 1

Algorithms and Data Structures

QNo	Question	Marks
1	Write a flowchart to calculate the area of a rectangle.	**4**
2	Write an algorithm to multiply two numbers.	**4**
3	Write Pseudocode to check whether a number is even or odd	**4**
4	Describe the various symbols used in flowcharts	**10**
5	Describe the properties of an algorithm	**4**
6	Write a flowchart to find the largest of three numbers.	**5**
7	Define an algorithm with a suitable block diagram	**4**
8	Discuss the classification of Data Structures	**10**
9	Briefly describe any two non primitive data structures	**8**
10	Describe any two asymptotic notations with examples	**10**
11	Define Time complexity	**2**
12	Define Space complexity	**2**
13	List the common operations performed on a data structure	**2**

Arrays

QNo	Question	Marks
1.	Define an array. What are the types of array. What are the advantages of using arrays?	**6**
2.	How do you declare and initialize a one-dimensional array in C?	**4**
3.	What are multi-dimensional arrays? Provide an example.	**4**
4	Write a C program to read and display elements of a one-dimensional array.	**4**
5	Explain the matrix operation with program.	**4**
6	Define sorting. write an algorithm for bubble sort.	**8**
7	Define searching. Explain any one algorithm with example in searching.	**10**
8	Illustrate any two array manipulation operations like insertion, deletion, and traversal?	**10**
9	What is bubble sort? How does it work ? Explain with the example?	**10**
10	Explain the linear search algorithm.	**4**
11	Discuss the deletion operation in arrays. What happens when you delete an element from an array?	**4**
12	Write a program to implement insertion in a one-dimensional array.	**10**
13	Write an algorithm for insertion in a one-dimensional array.	**5**
14	Write an algorithm for deletion in a one-dimensional array.	**5**

15	Write a program to implement deletion in a one-dimensional array.	**5**
16	Write a program for adding two matrices	**5**
17	Write a program to multiply two matrices	**10**
18	Write a program to obtain the transpose of a matrix.	**5**
19	Discuss memory allocation in 2D arrays using a sample program.	**10**

Linked Lists

QNo	Question	Marks
1	Explain the structure of a Node in a linked list. Write the structure representation of a node in C.	4
2	What is dynamic memory allocation	2
3	What are linked Lists	2
4	List advantages of Lists over arrays	4
5	List disadvantages of Lists over arrays	4
6	Write the algorithm to insert an element at the end of the singly linked list.	5
7	Write the program to insert an element at the end of the singly linked list.	5
8	Write the algorithm to delete an element in a singly linked list.	10
9	Write the program to delete an element in a singly linked list.	10
10	Write the algorithm to display all elements of the singly linked list.	5

11	Write the program to display all elements of the singly linked list.	5
12	Write the program to insert an element at the end of the circular singly linked list.	5
13	Write the program to delete an element from the circular singly linked list.	10
14	Write the program to display all elements of the circular singly linked list.	5
15	Write and explain the structure of a node in the Doubly linked list and show how it is specified using a structure.	4