22DAU207N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Second Semester)

Branch - **COMPUTER SCIENCE WITH DATA ANALYTICS**

FUNDAMENTALS OF DATA STRUCTURES

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following is non-liner data structure? a) Stacks b) List c) Strings d) Trees	K1	CO1
	2	How can we describe an array in the best possible way? a) The Array shows a hierarchical structure. b) Arrays are immutable. c) Container that stores the elements of similar types d) The Array is not a data structure	K2	CO1
2	3	If the number of records to be sorted is small, then ..... sorting can be efficient. a) Merge b) Heap c) Selection d) Bubble	K1	CO2
	4	Partition and exchange sort is ..... a) quick sort b) tree sort c) heap sort d) bubble sort	K2	CO2
3	5	Which of the following is the prefix form of A+B*C? a) A+(BC*) b) +AB*C c) ABC+* d) +A*BC	K2	CO3
	6	Which one of the following is the process of inserting an element in the stack? a) insert b) Add c) Push d) None of the above	K1	CO3
4	7	Minimum number of fields in each node of a doubly linked list is ____. a) 2 b) 3 c) 4 d) None of the above	K1	CO4
	8	The elements of a linked list are stored a) In a structure b) In an array c) Anywhere the computer has space for them d) In contiguous memory locations	K2	CO4
5	9	What is a full binary tree? a) Each node has exactly zero or two children b) Each node has exactly two children c) All the leaves are at the same level d) Each node has exactly one or two children	K1	CO5
	10	What is an AVL tree? a) which is unbalanced and is a height balanced tree b) which is balanced and is a height balanced tree c) a tree with at most 3 children d) a tree with three children	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Elaborate about the Data Structure Operations.	K6	CO2
		(OR)		
	11.b.	Discuss about the Linear Array operations.		
2	12.a.	Analyze the Bubble sort algorithm with example.	K4	CO1
		(OR)		
	12.b.	Examine the Merge sort procedure.		
3	13.a.	Determine the Array representation of Stack.	K4	CO2
		(OR)		
	13.b.	Explain about Priority Queue representation in detail.		
4	14.a.	Classify the Traversing of Linked List.	K4	CO3
		(OR)		
	14.b.	Inspect the Deletion operation for linked list.		
5	15.a.	Explain the Sequential representation and traversal of Binary Tree.	K4	CO5
		(OR)		
	15.b.	Evaluate the Traversing of AVL tree using stack.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Discover the Control structures in Data structures.	K4	CO1
2	17	Determine the Linked list representation of queue.	K4	CO2
3	18	Discuss the working procedure for Quick sort.	K4	CO3
4	19	Explain the Insertion operations for linked list.	K4	CO4
5	20	Elaborate the AVL search tree.	K6	CO5

Z-Z-Z END