PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Second Semester)

Common to Branches - **INFORMATION TECHNOLOGY & COMPUTER TECHNOLOGY**

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	Select the logical or Mathematical model that organizes data a) Data type b) Data Item c) Data Structure d) Data records	K1	CO1
	2	Give the string operation that finds the position of a string pattern that appears first in a text a) Indexing b) Substring c) Concatenation d) Length	K2	CO1
2	3	Write the Algorithm that efficiently finds a target item in a sorted list by repeatedly dividing the search interval in half. a) Binary Search b) Linear search c) Index Search d) Sequential Search	K1	CO2
	4	Predict the complexity of Merge-sort algorithm a) O(2 log n) b) O(n2) c) O (n) d) O(n log n)	K2	CO2
3	5	What is the situation when one wants to delete data from a data structure that is empty? a) Overflow b) Underflow c) Garbage d) Free pool	K1	CO3
	6	Identify the linked list whose last node points back to the first node. a) Circular list b) Two way list c) Head list d) Doubly list	K2	CO3
4	7	Write down the place where deletion of an item takes place in queue. a) Rear b) Front c) Top d) Middle	K1	CO4
	8	Give the other name for Reversed polish notation. a) Prefix b) Infix c) Postfix d) Suffix	K2	CO4
5	9	Specify the branch of tree that represents maximum number of nodes in it. a) Depth b) Path c) Branch d) Leaf	K1	CO5
	10	Predict the other name for Self-balancing binary trees. a) Binary trees b) Binary search trees c) Skewed trees d) AVL trees	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.	Explain Traversing in linear arrays.	K6	CO1
		(OR)		
	11.b.	Explain String operations: substring and concatenation with examples.		
2	12.a.	Demonstrate Linear Search with its Algorithm.	K3	CO2
		(OR)		
	12.b.	Illustrate Insertion Sort Algorithm for a given set of data.		
3	13.a.	Compare and Contrast linked list and two way list.	K2	CO3
		(OR)		
	13.b.	Discuss about Deleting the node following a given node algorithm in linked list.		
4	14.a.	Explain list representation of a priority queue.	K6	CO4
		(OR)		
	14.b.	Explain Recursion for finding factorial of a number.		
5	15.a.	Explain Linked representation of binary trees.	K6	CO5
		(OR)		
	15.b.	Explain Sequential representation of graphs.		

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	Explain about two dimensional arrays and summarize the algorithm to perform matrix multiplication.	K6	CO1
2	17	Employ Merge Sort Algorithm for a set of data and compute its complexity.	K3	CO2
3	18	Explain insertion of a node at the beginning of a list and after a given node in linked list.	K2	CO3
4	19	Explain the algorithm to transform infix expressions into postfix expressions.	K6	CO4
5	20	Formulate Preorder and Inorder tree traversal.	K6	CO5

Z-Z-Z END