

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Second Semester)

Branch - **COMPUTER SCIENCE**

DATA STRUCTURES & ALGORITHMS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

$$(10 \times 1 = 10)$$

Module No.	Question No.	Question	K Level	CO
1	1	Which one of the following is the size of int arr [9] assuming that int is of 4 bytes? a) 9 b) 36 c) 35 d) None of the above	K1	CO1
	2	Which of the following algorithm follows divide and conquer approach a) Bubble sort b) Insertion sort c) Merge sort d) Selection sort	K2	CO1
2	3	What is the value of the postfix expression 6 3 2 4 + - *. a) 1 b) 40 c) 74 d) -18	K1	CO2
	4	Which of the following information is stored in a doubly-linked list's nodes. a) Value of node b) Address of next node c) Address of the previous node d) All of the mentioned	K2	CO2
3	5	What is the need for a circular queue. a) Effective usage of memory b) Easier computations c) To delete elements based on priority d) Implement LIFO principle in queues	K1	CO3
	6	Which algorithm is used to form the Level order traversal of a tree a) Breadth first search b) Depth first search c) Dijkstra's algorithm d) Prims algorithm	K2	CO3
4	7	What type of strategy used to a problem can be solved by combining optimal solutions to non-overlapping problems a) Dynamic programming b) Greedy c) Divide and conquer d) Recursion	K1	CO4
	8	Which of the following data structure used for Depth first search algorithm implementation a) Graph b) Stack c) Trees d) Queue	K2	CO4
5	9	What is the type of the algorithm used in solving the 8 Queens problem? a) Greedy b) Dynamic c) Branch and Bound d) Backtracking	K1	CO5
	10	Which of the following Approach is the prime example for Dijkstra's Algorithm a) Dynamic programming b) Back tracking c) Branch and bound d) Greedy approach	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

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

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the purpose of structures with an example.	K5	CO1
	(OR)			
	11.b.	Explicate about the Sparse Matrices with an example.		
2	12.a.	Construct the Dynamic Memory Allocation with an example.	K3	CO2
	(OR)			
	12.b.	Utilize stack operations using arrays.		
3	13.a.	Illustrate about Heap sort with an example.	K3	CO3
	(OR)			
	13.b.	Build a Binary Tree Traversal with suitable example.		
4	14.a.	Distinguish Breadth First Search and Depth First Search with an example.	K4	CO4
	(OR)			
	14.b.	Analyze the Travelling salesman problem with examples.		
5	15.a.	List out the purpose of Prim's Algorithm.	K4	CO5
	(OR)			
	15.b.	Inference about the N-Queen problem with example.		

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	Compare Quick sort and Merge Sort algorithms.	K4	CO1
2	17	List out the various operations of Linked List. Explain any three operations with examples.	K4	CO2
3	18	Analyze the AVL search Trees its rotation techniques with an example.	K4	CO3
4	19	Determine the knapsack problem with suitable example.	K5	CO4
5	20	Explain about the Dijkstra's algorithm with an example graph.	K5	CO5

Z-Z-Z

END