

**PSG COLLEGE OF ARTS & SCIENCE**  
(AUTONOMOUS)

**BSc DEGREE EXAMINATION DECEMBER 2023**  
(Second Semester)

Branch – **COMPUTER SCIENCE**

**DATASTRUCTURES AND ALGORITHMS**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks

(5 X 1 = 5)

1. Collection of similar data types called
 

a) Array	b) Pointer
c) Graph	d) Structure
2. A function in turn calls itself is called as
 

a) Hashing	b) Recursion
c) Sorting	d) Searching
3. It is a list in which insertion takes place at REAR, whereas deletion takes place at FRONT.
 

a) Dequeue	b) Linked queue
c) Queue	d) Circular queue
4. Which of the following standard algorithms is not Dynamic Programming based?
 

a) Bell man ford algorithm	b) Warshall's algorithm
c) 0/1 Knapsack problem	d) Prim's algorithm
5. Dijkstra's algorithm is used to solve
 

a) Single source shortest path	b) All pairs shortest path
c) Network lock	d) Sorting

**SECTION – B (15 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks

(5 X 3 = 15)

6. a) Differentiate Array & Pointer.  
(OR)  
b) Illustrate on Sparse matrices.
7. a) Define the terms: Stack, Recursion.  
(OR)  
b) Give a brief account on Dynamic memory allocation.
8. a) Narrate the significance of Circular queue.  
(OR)  
b) What is Heap sort? Explain.
9. a) Write notes on asymptotic notations.  
(OR)  
b) Outline the algorithm of Breadth first search.
10. a) Write short notes on Branch and bound.  
(OR)  
b) Narrate Hamiltonian circuit.

Cont...

**SECTION – C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(5 X 6 = 30)

11. a) Discuss the concept of Merge sort.  
(OR)  
b) Explain about Time complexity of an algorithm.
12. a) Assess Insertion & deletion can be done in Singly linked list.  
(OR)  
b) How Infix expression is converted in to Postfix expression using Stack? Explain.
13. a) Describe various Binary tree traversal.  
(OR)  
b) Illustrate on AVL search trees.
14. a) Analyse Warshall's algorithm in dynamic programming.  
(OR)  
b) Discuss about Travelling salesman problem.
15. a) Explain Kruskal's algorithm with an illustrative example.  
(OR)  
b) Examine how n – queen problem can be solved using Backtracking.

Z-Z-Z      END