

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc (SS) DEGREE EXAMINATION MAY 2023
(Second Semester)

Branch – SOFTWARE SYSTEMS (Five years Integrated)

DATA STRUCTURE 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 _____ is a sequential representation of similar data types.
(i) Queue (ii) Array
(iii) Stack (iv) List
- 2 The queue which wraps around upon reaching the end of the array is called as _____.
(i) linked queue (ii) doubly linked list
(iii) circular queue (iv) representation of queue list
- 3 The operator symbol placed before two operands called _____.
(i) infix (ii) polish
(iii) postfix (iv) reverse polish
- 4 The efficiency of a BFS algorithm is dependent on _____.
(i) Algorithm (ii) Tree
(iii) Problem (iv) Graph
- 5 The operation of processing each element in the list is known as _____.
(i) sorting (ii) merging
(iii) inserting (iv) traversal

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Discuss abstract data types.
OR
b Explain about one dimensional array.
- 7 a Illustrate about recursion.
OR
b Sketch out the circular queue.
- 8 a Illustrate about single linked list.
OR
b Discuss about binary tree with example.

Cont...

- 9 a Illustrate about representations using adjacency matrix.
OR
b Explain about time complexity analysis.
- 10 a Discuss about linear probing in detail.
OR
b Explain about bubble sort with example.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Analyze about worst and average case time complexities.
OR
b Criticize sparse matrices and its applications.
- 12 a Elucidate about linear queue with example.
OR
b Analyze about priority queues with example.
- 13 a Enumerate doubly linked lists with suitable example.
OR
b Categorize infix and prefix expression with example.
- 14 a Criticize insertion of elements in binary search trees.
OR
b Elucidate about Graph Traversal Algorithm.
- 15 a Analyze about Hash function.
OR
b Elucidate about Insertion sort with example.

Z-Z-Z

END