

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc(SS) DEGREE EXAMINATION MAY 2024  
(Second Semester)

Branch - SOFTWARE SYSTEMS (five year integrated)

DATA STRUCTURES AND ALGORITHMS

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	The efficiency of a sequential search is _____. a) O(n)      b) O(n*n)      c) O(log <sub>2</sub> n)      d) O(n*n*n)	K1	CO2
	2	In ____ hashing, the key is squared and the address is selected from the middle of the result. a) direct      b) mid square c) subtraction      d) digit extraction	K2	CO1
2	3	A _____ list is a linked list with two or more logical lists. a) circular      b) double linked c) multi linked      d) Single linked	K1	CO3
	4	_____ a linked list means going through the list, node by node and processing each node. a) search      b) insert      c) delete      d) traversing	K2	CO3
3	5	_____ is an ordered list in which all insertions and deletions are made at one end called top. a) Queue      b) Trees      c) Graphs      d) Stack	K1	CO4
	6	Which data structure allows deleting data elements from front and inserting at rear? a) Stacks      b) Queues c) Dequeue      d) Binary search tree	K2	CO4
4	7	With _____ traversal, before visiting the root node, left sub-tree of the root node is to be visited then root node and after the visit of the root node right sub-tree of the root node will be visited. a) preorder      b) inorder c) postorder      d) both a and c	K1	CO5
	8	An _____ is a binary tree which stores an arithmetic expression. a) Heap tree      b) Huffman tree c) Expression tree      d) Decision tree	K2	CO5
5	9	A graph if it does not have any self loop or parallel edges is called _____ graph. a) simple      b) complete      c) weighted      d) connected	K1	CO3
	10	A graph is said to be _____ if each vertex v <sub>i</sub> is adjacent to every other vertex v <sub>j</sub> in G. a) simple      b) complete      c) weighted      d) connected	K2	CO3

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.	Discover the different types of asymptotic notation with example.	K4	CO1
	(OR)			
	11.b.	Summarize the basic concept of sparse matrix.		
2	12.a.	Distinguish between the single and double ended priority queues.	K5	CO2
	(OR)			
	12.b.	Illustrate the sequential implementation of stacks.		
3	13.a.	Develop a procedure to add and delete an element to a stack.	K6	CO3
	(OR)			
	13.b.	Evaluate the algorithm for inorder traversal of a binary tree.		
4	14.a.	Discuss the insertion and deletion of elements of binary search trees.	K5	CO4
	(OR)			
	14.b.	Assume the terminologies of graphs.		
5	15.a.	Elaborate the different types of hash function.	K6	CO5
	(OR)			
	15.b.	Develop a procedure for heap sort 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	Estimate the representation of multidimensional arrays.	K6	CO1
2	17	Demonstrate the algorithm for priority queues with example.	K6	CO2
3	18	Evaluate the implementation of circularly linked lists.	K5	CO4
4	19	Compare the depth first search and breadth first search.	K4	CO4
5	20	Assume the various techniques used in collision resolution.	K6	CO5

Z-Z-Z

END