Printed page: 2 Subject Code:ACSE0301

Roll No: | | | | | | | | | | | |

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B. Tech (CSE)

(SEM:3rd, SESSIONAL EXAMINATION –I) (2021-2022)

Subject Name: Data Structures [redacted]

Time: 1.15Hours Set A Max. Marks:30

General Instructions:

- All questions are compulsory. Answers should be brief and to the point.
- It comprises of three Sections, A, B, and C. You are to attempt all the sections.
- Section A -Question No- 1 is objective type questions carrying 1 mark each, Question No- 2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.
- Section B - Question No-3 is short answer type questions carrying 5 marks each. You need to attempt any two out of three questions given.
- Section C -Question No. 4 & 5are Long answer type (within unit choice) questions carrying 6marks each. You need to attempt anyone-part a *or* b.
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

		SECTION – A	[8]	
1.	Attempt all parts		(4×1=4)	CO
	a.	What is the best case and worst-case complexity of ordered linear search? a) O(nlogn), O(logn) b) O(logn), O(nlogn) c) O(n), O(1) d) O (1), O(n)	(1)	CO1
	b.	Where is linear searching used? a) When the list has only a few elements b) When performing a single search in an unordered list c) Used all the time d) When the list has only a few elements and when performing a single search in an unordered list	(1)	CO1
	c.	What is the best case for linear search? a) O(nlogn) b) O(logn) c) O(n) d) O (1)	(1)	CO1
	d.	How can we describe an array in the best possible way? a) The Array shows a hierarchical structure. b) Arrays are immutable. c) Container that stores the elements of similar types d) The Array is not a data structure	(1)	CO1

2.	Attempt all parts		(2×2=4)	CO
	a.	What do you understand by Data Structures? Explain the types.	(2)	CO1
	b.	What are Collision Resolution Techniques?	(2)	CO1
		SECTION – B		
3.	Answer any two of the following-		[2×5=10]	CO
	a.	Define the various asymptotic notations. Derive the O-notation for linear search.	(5)	CO1
	b.	What are the merits and demerits of array? Given two arrays of integers in ascending order, develop an algorithm to merge these arrays to form a third array sorted in ascending order.	(5)	CO1
	c.	What is Sorting? Write an algorithm for Quick Sort.	(5)	CO1
		SECTION – C		
4	Answer any one of the following- (Anyone can be applicative if applicable)		[2×6=12]	CO
	a.	Write a program in Python for Binary Search.	(6)	CO1
	b.	Write a program in Python for Bubble Sort.	(6)	CO1
5.	Answer any one of the following-			
	a.	Write an algorithm for merge sort. Sort the following array using merge sort: 99,6,86,15,58,35,86,4,0	(6)	CO1
	b.	What do you understand by the term Hashing? Define hash table. What are the different hash functions?	(6)	CO1