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PRN No.	

PAPER CODE	U213-212(RE)

December 2023 (REEXAM)

SY (SEMESTER - I)

COURSE NAME:DATA STRUCTURE **Branch: AI&DS** **COURSE CODE:ADUA21202**

(PATTERN 2020)

Time: [2 Hrs] **[Max. Marks: 60]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **All questions are compulsory. Solve any two sub questions each from each Question 1 ,2, 3,4,5,and 6 respectively**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a)Compare and Contrast Compiler and Interpreter with suitable example.	[5]	CO1	Analyze
	b) Compare and Contrast Linear and Non Linear Data structure with suitable example.	[5]	CO1	Analyze
	c) Compare and contrast different Asymptotic notations.	[5]	CO1	Analyze
Q2	a) Describe Row major and column major arrangement and address calculation with suitable example.	[5]	CO2	Understand
	b) Write a pseudo code for fast transpose of sparse matrix.	[5]	CO2	Apply
	c) Design algorithm to perform addition of two single variable polynomial using array.	[5]	CO2	Apply
Q3.	a)Write a pseudo code for binary search. Apply binary search on given data 23,5,6,77,89,9,45,7,22,13,55 search key is 22	[5]	CO3	Apply
	b)Write Algorithm for Merge sort and Apply Merge sort on given data 22,34,5,66,7,45,33,46,9,98,67	[5]	CO3	Apply
	c) Describe the issues raised when rehashing is used for collision handling and how to tackle them.	[5]	CO3	Analyze
Q.4	a) Write a pseudo code to simulate insert, delete and display operation on circular linked list.	[5]	CO4	Apply
	b) Write a pseudo code for adding elements at the middle, at the begin and at the end of a single linked	[5]	CO4	Apply

	list. c) Write a pseudo code for representing Single variable polynomial using single linked list.	[5]	CO4	Apply
Q.5	a) Write pseudo code to simulate push, pop, isoverflow, isempty operations on stack using array. b) Consider the following arithmetic expression written in postfix notation 10, 2, * , 15, 3, / , + , 12, 3, 2, ↑ , + , + evaluate this expression to find its value. c) State the algorithm for converting infix expression to post-fix expression using stack. Use this algorithm to convert the following infix expression to post-fix expression using stack. (A+B) –(C*D)/(E/F)	[5] [5] [5]	CO5 CO5 CO5	Apply Apply Apply
Q.6)	a) How circular queue overcome issues of linear queue. Write pseudo code to simulate circular queue operations using array. b) What is priority queue? Various ways to implement priority queue and its applications in detail. c) Write the pseudo code for implementing different operations of queue data structure using array	[5] [5] [5]	CO6 CO6 CO6	Apply Apply Apply