Roll No.	2	0	2	2	2	4	4	8	7	

NIST INSTITUTE OF SCIENCE & TECHNOLOGY
(Autonomous)

B.Tech 3rd Semester (2022 Batch)				Branch(s)	ALL
Subject Code	22CM3ES01T	Subject Name		Data Structure using C	
Time	90 min	Exam	Mid Semester	Max. Marks	50
Examination Superintendent		Prof. Chittaranjan Biswal			
Name of the Instructor(s)		Prof. Ch Sree Kumar, Prof. Debasis Padhy, Prof. Pradeep Kumar Jena, Prof. Dr. Susmita Mahato, Prof. K L Narayana, Prof. Amaresh Mohanty, Prof. Asutosh Parida, Prof. Manisha Patro, Prof. Swetanjali Maharana			
Date of Examination		24-11-2023	Sitting	01st 08:30- 10:00 AM	

***Answer Question No.1 from* PART-I *which is compulsory, any four from PART-*II *and any one from* PART-III.**

The figures in the right hand margin indicate marks.

PART-I

(Answer all the questions)

Q1.		CO	Level	Level-1: Knowledge Level-2: Comprehension Level-3: Application Level-4: Analysis Level-5: Synthesis Level -6: Evaluation	2 X 5
	(a)	1	2	What is ADT? Write ADT of stack.	
	(b)	1	2	What is the disadvantage of linear queue and how it overcomes in circular queue?	
	(c)	1	3	For the given matrix of size (4x3) draw the Sparse matrix in triplet form 11 0 0 0 0 22 0 0 0 0 3 0	

	(d)	2	4	void traverse (node *start)
				{
				ptr=start;
				while(ptr->next != NULL)
				{ printf("%d",ptr->info); ptr = ptr->next; }
				}
				Does the above code traverse the linked list properly? If NO then rewrite the above function properly.	

	(e)	2	2	How do you represent a polynomial $13x^2 - 14y + 85$ using a linked list?	

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PART-II

(Answer Any Four questions out of six)

Q2.		CO	Level	Level-1: Knowledge Level-2: Comprehension Level-3: Application Level-4: Analysis Level-5: Synthesis Level -6: Evaluation	4 X 6
	(a)	1	4	Using stack convert the given infix to its equivalent postfix expression. Show the steps: A + B + C - (D * E) / F	
	(b)	2	4	Write an algorithm/ function to write any 2 operations insertbegin() , countnodes() and deleteend() in a singly circular linked list	
	(c)	1	4	Write the following functions to implement push() and pop() and isfull() and isempty() of a Character STACK	
	(d)	2	4	What is self referential structure. Show an example. Draw the structure of a node in a Doubly linked list. Write a function to print in reverse order.	

	(e)	2	3	Write a menu driven program for the functions to be performed on a DOUBLY LINKED LIST
				Note: the node stores roll, name and marks of student
				The function calls are shown below
				head=ins_beg(head);
				head=del_beg(head);	

	(f)	1	4	Write a function to convert the decimal to binary using STACK.	

PART-III

(Answer Any One question out of two)

		CO	Level	**Level-1:** Knowledge **Level-2:** Comprehension **Level-3**: Application **Level-4**: Analysis **Level-5:** Synthesis **Level -6:** Evaluation	1 X 16
Q3.	(a)	1	4	Write a menu driven program to implement the enque() and deque() of Circular queue. Also write isfull() isempty() and countelements()	
	(b)	1	4	How do you represent sparse matrix efficiently. Print it Print the transpose of the sparse matrix.	
Q4.	(a)	2	4	Write a menu driven program for the functions to be performed on a singly linked list [Linear linked list]: insertbegin(), deleteend() and insertend() Note: the node stores roll, name and marks of student	
	(b)	1	4	Write a program in C to reverse a string using stack.	