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NIST INSTITUTE OF SCIENCE & TECHNOLOGY
(Autonomous)

B. Tech 3rd Semester (2020 Batch)				Branch(s)	*ALL*
Subject Code	19CM3ES01T	Subject Name		Data Structures using C	
Time	*90 min*	Exam	Mid Semester	Max. Marks	50
Examination Superintendent		Dr. Manabendra Patra			
Name of the Instructor(s)		*Prof. Ch Sree Kumar, Prof Pradeep K Jena, Prof. Raj K Baliyar Singh, Prof Manswini*			
Date of Examination		*22.11.22*	Sitting	1st (8:30 AM to 10 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 the STACK.	
	(b)	2	4	How polynomials are represented?	
	(c)	1	3	8 0 5 0 0 55 0 0 -22 0 7 0 For the above matrix draw the Sparse matrix in 3 tuple form and also write the transpose of the Sparse matrix properly.	
	(d)	2	2	Draw the node structure of the Singly linked list	

	(e)	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, what are the changes to be done in this code?	

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	5	Write a program to read data for n number of employees [ID, name, salary]. Store the data and print. Use structure pointer.	
	(b)	1	4	Write a function to generate the 3-tuple sparse matrix representation for a given mxn matrix	
	(c)	1	5	Write a function that prints if a string is a palindrome or not using STACK.	
	(d)	2	4	Write 2 separate functions to Delete a node from the beginning and from the end in a Singly linked list. Also write the structure of the node.	
	(e)	1	3	Write a menu-driven program to implement the CIRCULAR QUEUE. [INSERT, DELETE, DISPLAY, COUNTELEMENTS functions to be written]	
	(f)	2	4	Write a program to show the usages of malloc(), realloc() and free()	

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	Convert the given infix expression to postfix using STACK and write the steps clearly: A + B - C / (E – F * G)	
	(b)	2	4	Write 2 separate functions to Delete a node from the beginning and from the end in a Doubly linked list. Also write the structure of the node.	
Q4.	(a)	1	4	Write a menu driven program to implement push() and pop() and isfull() and isempty() of a Character STACK	
	(b)	2	4	Write a function to store and print polynomial and write another function to add 2 polynomials [an application of linked list]	