	B.M.SCOLLEGEOF ENGINEERING,BANGALORE-19 **Computer Science & Engineering**

INTERNALS-2		
Course Code: 19CS3PCDST	**Course Title: Data Structures**	
Semester:3	**Maximum Marks: 40**	**Date:30-11-2020**
Faculty Handling the Course:	Dr. Kayarvizhy, Prof. Sheethal V A,Prof. Selvakumar S	
Instructions: ***Internalchoiceis providedinPart C.***		

PART-A

Total 5 Marks (No Choice)[CO1-PO1]

No.	Question	Marks
1	Differentiate between static allocation technique and Dynamic allocation technique.	5

PART-B

Total 15 Marks (No Choice)[CO2-PO2]

No.	Question	Marks

2a.	Consider the following function that takes reference to the first of a singly Linked List as parameter.
	struct node
	{
	int info;
	struct node *link;
	};
	typedef struct node *NODE;
	
	NODE func_called(NODE first)
	{
	NODE temp;
	if(first==NULL)
	{
	printf("list is empty cannot delete\n");
	return first;
	}
	temp=first;
	temp=temp->link;
	printf("item deleted is=%d\n",first->info);
	free(first);
	return temp;
	}
	Assume that reference of first of following singly linked list is passed to above function 45 --> 24 --> 63 --> 59 --> 55 -->18.
	Analyze the above code and write a neat diagram to represent the modified linked list and its contents after the function call.
		5

2b.	Analyze the following C function takes a key element and first parameter as input argument. It searches for the key item entered by the user and displays if the item is present or not. Complete the blank part of the code to perform the above operation.
	
	void search(int key,NODE first)
	{
	NODE cur;
	if(first==NULL)
	{
	_____
	_____
	}
	_____
	while(cur!=NULL)
	{
	if(key==cur->info)break;
	_____
	}
	if(cur==NULL)
	{
	_____
	_____
	}
	_____
	}
		5

2c.	The singly Linked List consists the following items as follows: 10-> 20-> 30-> 40-> 50. After the function is called the list is displayed as follows: 50-> 40-> 30-> 20-> 10. Write the C-Function that performs the above operation.	5

PART- C

Total 20 Marks (Answer any 2 Question)[CO3-PO3]

No.	Question	Marks
3a.	The Diamond jewelry exhibition organized decided to design an output restricted counter, which is a special case of a counter in which people are allowed to enter the counter at both ends but exit only at one end. Develop a suitable application(C Program) to demonstrate above entry and exit system.	10
	OR	

3b.	The company has decided to provide the incentives for their employees who work for that company more than 8 hours. The list of selected employees (Employee_id, Name, Mobile Number, and Hours_Worked) information has to be updated on the website. Use a circular linked list to store the information of the employee and develop a C function to display all the Employee-id who works more than 8 hours.	10
4a.	Implement the C-Program which works as both Stacks and Queue using a Linked List.	10
	OR	
4b.	The department maintains the list of students in order format as per the register number. If the student joins the department the register number is given, which has to be inserted at the correct place in the list and if the student leaves the department the register number has to be provided by the student so that it is removed from the list. Write a C function to simulate the above scenario using Singly Linked List.	10

ALL THE BEST