SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY
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QUESTION BANK (DESCRIPTIVE)

Subject with Code: C and Data Structures(19CS0505)   **Course & Branch**: B.Tech - CSE

Year & Sem: II-B.Tech & I-Sem

Regulation: R19

UNIT –I
INTRODUCTION TO C LANGUAGE

1		What is an operator?Explain the arithmetic,relational,logical and assignment operators in C language with appropriate example.	[L2][CO1]	**[12M]**
2	a	Explain the general form of a C program with an example.	[L2][CO2]	**[6M]**
	b	What is an expression? Explain different categories of expressions.	[L2][CO1]	**[6M]**
3	a	Write about while and for loops and write suitable examples.	[L3][CO2]	**[6M]**
	b	Write a program to determine the Greatest Common Divisor (GCD)of two numbers.	**[L3][CO5]**	**[6M]**
4		List and explain loop control statements in C.	[L2][CO2]	**[12M]**
5	a	Explain in detail about the data types in C.	[L2][CO2]	**[6M]**
	b	Explain the syntax and use of switch statement with suitable example.	[L2][CO2]	**[6M]**
6		With examples explain different decision statements in C?	[L2][CO2]	**[12M]**
7	a	Describe the multiway selection statements in C with examples.	[L2][CO1]	**[6M]**
	b	Write a C program to check whether a given number is Armstrong number or not	[L3][CO5]	**[6M]**
8	a	List out unconditional control statements. Explain the difference among them.	[L2][CO2]	**[8M]**
	b	Write a program to find the factorial of a given number.	[L3][CO5]	**[4M]**
9	a	Write a program to find sum of individual digits of a given number.	[L3][CO5]	**[6M]**
	b	Explain else-if ladder with the help of flowchart and program.	[L2][CO3]	**[6M]**
10		What is the purpose of a printf() and scanf() statements? Write a C program to find area of a triangle.	[L2][CO2]	**[12M]**

UNIT –II
ARRAYS, FUNCTIONS and STRINGS

1		Write a C program to multiply two matrices of different order.	[L3][CO5]	**[12M]**
2	a.	Define function. List out the advantages of functions.	[L1][CO1]	**[6M]**
	b.	Write a C program using function to exchange two numbers using pointers.	[L3][CO5]	**[6M]**
3	a.	What is recursion? What are the advantages and disadvantages of recursion?	[L2][CO1]	**[6M]**
	b.	Write a C program to find the factorial of a given number using recursion.	[L3][CO5]	**[6M]**
4	a.	What is an array? What are the advantages of arrays over a ordinary variables? How arrays are declared and initialized?	[L2][CO2]	**[6M]**
	b.	Write a program for finding the largest number in an array.	[L3][CO5]	**[6M]**
5		What is 2D array? Write program for addition of 2 matrices.	[L3][CO4]	**[12M]**
6	a	Distinguish between call by value and call by reference with examples.	[L4][CO2]	**[6M]**
	b	Discuss any five string handling functions.	[L2][CO1]	**[6M]**
7	a.	How to pass array elements as arguments to function? Explain with one example.	[L2][CO2]	**[6M]**
	b.	Write a C program to illustrate call-by-value parameter passing technique.	[L3][CO5]	**[6M]**
8		List and explain the storage classes with examples.	[L2][CO1]	**[12M]**
9		Write about categories of functions with examples.	[L3][CO2]	**[12M]**
10		What is an array? Explain declaration, initialization and applications of multidimensional array with an example.	[L2][CO4]	**[12M]**

UNIT –III
POINTERS, STRUCTURES & UNIONS

1	a	Define structure and give the general syntax for structure. Write suitable example program.	[L1][CO2]	[6M]
	b	Give difference between the structures and union.	[L4][CO2]	[6M]
2	a	How do you define structure within a structure? Explain with an example.	[L2][CO2]	[6M]
	b	Briefly explain bit fields concept.	[L2][CO1]	[6M]
3	a	Define pointer. How to pass a pointer to a function? Explain.	[L2][CO1]	[6M]
	b	Illustrate the use of typedef with suitable example.	[L3][CO2]	[6M]
4	Write about dynamic memory management functions in C.		[L3][CO2]	[12M]
5	a	Explain the concept of array of pointers with examples.	[L2][CO2]	[6M]
	b	Write a C program to read and display multiple strings using pointers.	[L3][CO5]	[6M]
6	Discuss below terms with examples: (a) Nested structures. (b) Array of structures.		[L2][CO1]	[12M]
7	a	What is a pointer? What are the features of pointers? Write a C program to print address of a variable.	[L1][CO2]	[6M]
	b	Explain the concept of pointer to pointers with examples.	[L2][CO2]	[6M]
8	a	Explain the concept of void pointers with examples.	[L2][CO2]	[6M]
	b	Explain pointers and arrays with some example programs.	[L2][CO2]	[6M]
9	a	Define union and give the general syntax for union. Write suitable example program.	[L6][CO2]	[6M]
	b	How to declare and initialize a structure with examples?	[L2][CO2]	[6M]
10	a	What is the use of period operator? Give an example.	[L3][CO2]	[6M]
	b	Give the differences between structures and arrays.	[L4][CO2]	[6M]

UNIT –IV
DATA STRUCTURES

1		What are the advantages and disadvantages of stack? Write a program to illustrate stack operations.	[L3][C02]	**[12M]**
2	a	Construct an empty stack and perform PUSH operation for any five elements. Also perform POP operation for two elements and show the value on top of the stack.	[L6][CO5]	**[6M]**
	b	What do you mean by stack overflow and stack underflow	[L2][CO1]	**[6M]**
3		What is a stack? What are various operations that can be performed on them? Explain with an example.	[L2][CO2]	**[12M]**
4		What is a queue? What are various operations that can be performed on them? Explain with an example.	[L2][CO2]	**[12M]**
5		Write a program to perform basic operations on stack.	[L6][CO5]	**[12M]**
6		Write a program to perform basic operations on queue.	[L6][CO2]	**[12M]**
7		State any two applications of stacks and queues? With an example, explain infix,postfix and prefix notations.	[L6][CO2]	**[12M]**
8	a	What is data structure? Explain the linear and non linear data structure in detail.	[L2][CO1]	**[6M]**
	b	What are the advantages and disadvantages of stack and queue.	[L2][CO1]	**[6M]**
9		Discuss application of stack. Write a program on stack with array implementation.	[L5][CO2]	**[12M]**
10		Discuss application of queue. Write a program on queue with array implementation.	[L5][CO2]	**[12M]**

UNIT –V
LINKED LIST, SEARCHING AND SORTING

1	What do you mean by sorting? Mention different types of sorting. Explain Quicksort in detail.	[L2][CO1]	**[12M]**
2	Explain the applications of linked lists.	[L2][CO1]	**[12M]**
3	Explain briefly about various types of linked lists with suitable examples.	[L2][CO1]	**[12M]**

4	Explain the following operations in double linked list
	   i) Create an empty list
	   ii)Insert the elements 10 and 20 at the front of the list.
	   iii)Insert the element 30 at the middle of the list.
	   iv)Insert the element 15,45 at the end of the list.
	   v)Delete the middle element from the list.
		[L4][CO2]	**[12M]**

5	What is meant by sorting? Write the algorithm for selection sort and illustrate with an example.	[L6][CO2]	**[12M]**
6	a	Sort the following numbers using merge sort : 45,34,12,46,27,56,11,87,6,33,28.	[L4][CO5]	**[6M]**
	b	Explain insertion sort with an example.	**[L2][CO2]**	**[6M]**
7	What do you mean by Searching? Explain sequential search and binary search with suitable example.	[L2][CO2]	**[12M]**

8	Implement the following single linked list operations:
	
	   a.Insertion of a node
	   b.Deletion of a node
	   c.Searching an element
		[L3][CO5]	**[12M]**

9	Write the various operations of double linked list in detail.	[L3][CO1]	**[12M]**
10	Explain the difference between straight insertion sort and list insertion sort with suitable examples.	[L2][CO2]	**[12M]**

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