



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY  
(AUTONOMOUS)**

(Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu)  
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**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code : C & DATA STRUCTURES(20CS0501)**

**Course & Branch : B. Tech - CSE,CIC,CSM,CSIT,CIVIL & AGE**

**Year & Semester : I - B. Tech. & I - Semester**

**Regulation : R20**

**UNIT –I  
INTRODUCTION TO C LANGUAGE**

<b>1</b>	Explain the C language elements with example.	[L4,CO1]	<b>[12M]</b>
<b>2</b>	a Describe the Structure of C Program with neat diagram.	[L2,CO1]	<b>[6M]</b>
	b Define a Variable. What are the rules for declaring a variable?	[L4,CO1]	<b>[6M]</b>
<b>3</b>	a Explain in detail about the data types in C.	[L2,CO1]	<b>[6M]</b>
	b Define the syntax and use of switch statement with suitable example.	[L2,CO1]	<b>[6M]</b>
<b>4</b>	a Write about different looping statements with suitable examples.	[L3,CO2]	<b>[6M]</b>
	b Write a program to print first n terms in Fibonacci series.	[L3,CO2]	<b>[6M]</b>
<b>5</b>	a Define the syntax and use of switch statement with suitable example.	[L1,CO2]	<b>[6M]</b>
	b Write a program for to find reverse of the given number.	[L5,CO2]	<b>[6M]</b>
<b>6</b>	Explain about Input and Output functions with examples.	[L3,CO1]	<b>[12M]</b>
<b>7</b>	Examine with examples of different decision statements in C.	[L4,CO2]	<b>[6M]</b>
<b>8</b>	a Define Expression. Mention types of expressions.	[L1,CO1]	<b>[6M]</b>
	b Explain about precedence and associativity in C.	[L3,CO1]	<b>[6M]</b>
<b>9</b>	a Differentiate break, continue and goto statements.	[L2,CO2]	<b>[6M]</b>
	b Define a type conversion. What are different types of types conversions explain with example.	[L1,CO1]	<b>[6M]</b>
<b>10</b>	Describe the various operators available in C with examples.	[L3,CO1]	<b>[12M]</b>

**UNIT –II**  
**ARRAYS, FUNCTIONS and STRINGS**

<b>1</b>		Determine various types of Arrays with examples.	[L5,CO2]	<b>[12M]</b>
<b>2</b>	a.	Write a program for finding the sum of an array elements.	[L3,CO2]	<b>[6M]</b>
	b.	Write a C program for displaying largest element in array.	[L3,CO2]	<b>[6M]</b>
<b>3</b>	a.	Write a C program for displaying smallest element in array.	[L3,CO2]	<b>[6M]</b>
	b.	Distinguish between call by value and call by reference with examples	[L4,CO3]	<b>[6M]</b>
<b>4</b>	a.	What is recursion? Mention advantages and disadvantages of recursion.	[L1,CO3]	<b>[6M]</b>
	b.	Write a C program for factorial of a given number using recursion.	[L3,CO3]	<b>[6M]</b>
<b>5</b>		What are the different categories of functions? Explain with example.	[L3,CO3]	<b>[12M]</b>
<b>6</b>	a	How to pass array as arguments to function? Explain with one example.	[L1,CO3]	<b>[6M]</b>
	b	Differentiate local and global variable with example.	[L2,CO3]	<b>[6M]</b>
<b>7</b>	a.	Describe about type qualifiers in C.	[L1,CO3]	<b>[6M]</b>
	b.	Determine any four preprocessor commands.	[L5,CO3]	<b>[6M]</b>
<b>8</b>		Describe the different storage classes with example.	[L3,CO2]	<b>[12M]</b>
<b>9</b>		Define String. Explain the different string handling functions with example.	[L4,CO3]	<b>[12M]</b>
<b>10</b>		What is 2D array? Write program for addition of two matrices.	[L3,CO2]	<b>[12M]</b>

**UNIT –III**  
**POINTERS, STRUCTURES & UNIONS**

<b>1</b>	a	Define structure and give the general syntax for structure. Write suitable example program.	[L1,CO4]	[6M]
	b	Give difference between the structures and union.	[L4,CO4]	[6M]
<b>2</b>	a	How do you define structure within a structure? Explain with an example.	[L2,CO4]	[6M]
	b	Briefly explain bit fields concept.	[L2,CO4]	[6M]
<b>3</b>	a	Define pointer. How to pass a pointer to a function? Explain.	[L2,CO3]	[6M]
	b	Illustrate the use of typedef with suitable example.	[L3,CO4]	[6M]
<b>4</b>		Write about dynamic memory management functions in C.	[L5,CO3]	[12M]
<b>5</b>	a	Explain the concept of array of pointers with examples.	[L2,CO3]	[6M]
	b	Write a C program to read and display multiple strings using pointers.	[L3,CO3]	[6M]
<b>6</b>		Discuss below terms with examples: (a) Nested structures. (b) Array of structures.	[L6,CO4]	[12M]
<b>7</b>	a	What is a pointer? What are the features of pointers? Write a C program to print address of a variable.	[L1,CO3]	[6M]
	b	Explain the concept of pointer to pointers with examples.	[L5,CO3]	[6M]
<b>8</b>	a	Explain the concept of void pointers with examples.	[L3,CO3]	[6M]
	b	Explain pointers and arrays with some example programs.	[L2,CO3]	[6M]
<b>9</b>	a	Define union and give the general syntax for union. Write suitable example program.	[L3,CO4]	[6M]
	b	How to declare and initialize a structure? Mention with example.	[L2,CO4]	[6M]
<b>10</b>	a	What is the use of period operator? Give an example.	[L1,CO4]	[6M]
	b	Give the differences between structure and array.	[L4,CO4]	[6M]

**UNIT –IV**  
**DATA STRUCTURES**

<b>1</b>		What are the advantages and disadvantages of stack? Write a program to illustrate stack operations.	[L3,CO5]	[12M]
<b>2</b>	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,CO5]	[6M]
<b>3</b>		What is a stack? What are various operations that can be performed on them? Explain with an example.	[L2,CO5]	[12M]
<b>4</b>		What is a queue? What are various operations that can be performed on them? Explain with an example.	[L2,CO5]	[12M]
<b>5</b>		Write a program to perform basic operations on queue.	[L6,CO5]	[12M]
<b>6</b>		State any two applications of stacks and queues? With an example, explain infix, postfix and prefix notations.	[L4,CO5]	[12M]
<b>7</b>	a	What is data structure? Explain the linear and nonlinear data structure in detail.	[L2,CO5]	[6M]
	b	What are the advantages and disadvantages of stack and queue.	[L1,CO5]	[6M]
<b>8</b>		Explain briefly about various types of linked lists with suitable examples.	[L3,CO6]	[12M]
<b>9</b>		Implement the following single linked list operations: a.Insertion of a node b.Deletion of a node c.Searching an element	[L6,CO6]	[12M]
<b>10</b>		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.	[L5,CO6]	[12M]

## UNIT –V

### SEARCHING AND SORTING

<b>1</b>	Define sorting? Mention different types of sorting. Explain Quicksort in detail.	[L4,CO6]	<b>[12M]</b>
<b>2</b>	Explain the algorithm for merge sort and give a suitable example.	[L5,CO6]	<b>[12M]</b>
<b>3</b>	Sort the following numbers using selection sort and insertion sort: 45, 25, 10, 2, 9, 85, 102, 1	[L4,CO6]	<b>[12M]</b>
<b>4</b>	Discuss the algorithm to sort the elements using exchange sort.	[L2,CO6]	<b>[12M]</b>
<b>5</b>	What is meant by sorting? Write the algorithm for selection sort and illustrate with an example.	[L3,CO6]	<b>[12M]</b>
<b>6</b>	a   Sort the following numbers using merge sort : 45,34,12,46,27,56,11,87,6,33,28.	[L4,CO6]	<b>[6M]</b>
	b   Explain insertion sort with an example.	[L3,CO6]	<b>[6M]</b>
<b>7</b>	What do you mean by Searching? Explain sequential search and binary search with suitable example.	[L3,CO6]	<b>[12M]</b>
<b>8</b>	Write binary search algorithm for finding given element is in the list or not.	[L6,CO6]	<b>[12M]</b>
<b>9</b>	a)Compare binary search and linear search techniques b) Find the number 77 from the following set of numbers using binary search : 6, 12, 17, 23, 38, 45, 77, 84, 90.	[L4,CO6] [L3,CO6]	<b>[5M]</b> <b>[5M]</b>
<b>10</b>	Explain the difference between merge sort and quick sort with suitable examples.	[L5,CO6]	<b>[12M]</b>