



VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203.

DEPARTMENT OF GENERAL ENGINEERING



QUESTION BANK

SUBJECT : Programming in C

SEM / YEAR : Second Semester / 1st Year

UNIT I - <u>BASICS OF C PROGRAMMING</u>			
Introduction to programming paradigms - Structure of C program - C programming: Data Types –Storage classes - Constants – Enumeration Constants - Keywords – Operators: Precedence and Associativity - Expressions - Input/output statements, Assignment statements – Decision making statements - Switch statement – Looping statements – Pre-processor directives - Compilation process			
PART - A			
Q.No	Questions	BT Level	Competence
1.	Define programming paradigm.	BTL -1	Remember
2.	Give two examples for assignment statements.	BTL -1	Remember
3.	Distinguish between character and string.	BTL -2	Understand
4.	What are keywords? Give an example.	BTL -1	Remember
5.	What do you mean by variables in 'C'?	BTL -1	Remember
6.	Identify the use of ternary or conditional operator.	BTL -4	Analyze
7.	What is mean by Operators precedence and associative?	BTL -2	Understand
8.	What is a compilation process?	BTL -1	Remember
9.	How to create enumeration constants ?	BTL -4	Analyze
10.	Differentiate between an expression and a statement in C.	BTL -4	Analyze
11.	What is the output of the programs given below? <pre>#include <stdio.h> main() { int a = 20, b = 10, c = 15, d = 5; int e; e = (a + b) * c / d; printf("Value of (a + b) * c / d is : %d\n", e); }</pre>	BTL -3	Apply
12.	Generalize the types of I/O statements available in 'C'.	BTL -6	Create
13.	Classify the different types of storage classes.	BTL -3	Apply

14.	Discover the meaning of C pre-processor.	BTL -3	Apply
15.	Invent the difference between ++a and a++.	BTL -6	Create
16.	Differentiate switch() and nested-if statement.	BTL -2	Understand
17.	Summarize the various types of C operators.	BTL -5	Evaluate
18.	Recommend the suitable example for infinite loop using while.	BTL -5	Evaluate
19.	What is a global variable?	BTL -1	Remember
20.	Differentiate break and continue statement.	BTL -2	Understand
PART - B.			
1.	Describe the structure of a C program with an example.(16)	BTL -1	Remember
2.	Discuss about the constants, expressions and statements in 'C'. (16)	BTL -2	Understand
3.	Illustrate about the various data types in 'C'. (16)	BTL -3	Apply
4.	Summarize the various types of operators in 'C' language along with its priority. (16)	BTL -2	Understand
5.	Explain about the various decision making and branching statements. (16)	BTL -1	Remember
6.	Write short notes on the following: (6+5+5) a. 'for' loop b. 'while' loop c. 'do...while' loop	BTL -1	Remember
7.	Illustrate the storage class specifiers with example. (16)	BTL -3	Apply
8.	Discuss about pre processor directive with example program. (16)	BTL -2	Understand
9.	Explain the following: i. Keywords (3) ii. Identifiers (4) iii. C character set (4) iv. Constants and volatile variables (5).	BTL -5	Evaluate
10.	Write a C program for the following : a. To check whether a given year is leap or not.(4) b. To find the roots of a quadratic equation.(8) c. To convert the temperature given in Fahrenheit to Celsius(4)	BTL -4	Analyze
11.	Develop a C program for the following : a. To find the area and circumference of a circle with radius r.(4) b. To find the sum of first 100 integers.(6) c. To reverse the digits of a number. (123 => 21).(6)	BTL -6	Create

12.	Write a C program for the following : a. To find the sum of the digits of a number. (123 => 1+2+3=6).(5) b. To find the sum of all odd / even numbers between 1 and 100.(5) c. To check whether a number is prime or not.(6)	BTL -4	Analyze
13.	Write a C program for the following : a. To check whether a given number is a palindrome (232) or not. (8) b. To generate the first n numbers in a Fibonacci series. (8)	BTL -1	Remember
14.	Write a C program for the following : a. To generate Armstrong number between 100 and 999. (8) b. Calculate $\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots +$ $\frac{x^n}{n!}$. (8)	BTL -4	Analyze



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UNIT II - ARRAYS AND STRINGS			
Introduction to Arrays: Declaration, Initialization – One dimensional array – Example Program: Computing Mean, Median and Mode - Two dimensional arrays – Example Program: Matrix Operations (Addition, Scaling, Determinant and Transpose) - String operations: length, compare, concatenate, copy – Selection sort, linear and binary search.			
PART - A			
Q.No	Questions	BT Level	Competence
1.	List out the features of Arrays.	BTL -1	Remember
2.	Define a float array of size 5 and assign 5 values to it.	BTL -1	Remember
3.	Identify the main elements of an array declaration.	BTL -4	Analyze
4.	What are the drawbacks of Initialization of arrays in C?	BTL -1	Remember
5.	What will happen when you access the array more than its dimension?	BTL -1	Remember
6.	Point out an example code to express two dimensional array.	BTL -4	Analyze
7.	How to create a two dimensional array?	BTL -2	Understand
8.	What is the starting index of an array?	BTL -3	Apply
9.	Distinguish between one dimensional and two dimensional arrays.	BTL -4	Analyze
10.	What are the different ways of initializing array?	BTL -2	Understand
11.	What is the use of '\0' and '%s'?	BTL -1	Remember
12.	Is address operator used in scanf() statement to read an array? Why?	BTL -6	Create
13.	What is the role of strcmp()?	BTL -3	Apply
14.	Discover the meaning of a String.	BTL -3	Apply
15.	How to initialize a string? Give an example.	BTL -6	Create
16.	Differentiate between Linear search and Binary search.	BTL -2	Understand

17.	Write the output of the following Code: <pre>main() { char x; x = 'a'; printf("%d \n",x); }</pre>	BTL -5	Evaluate
18.	Specify any two methods of sorting.	BTL -5	Evaluate
19.	List out the any four functions that are performed on character strings.	BTL -1	Remember
20.	Write the output of the following Code: <pre>main() { static char name[]="KagzWrxA d" int i=0; while(name[i]!='\0') { printf("%c",name[i]); i++; } }</pre>	BTL -2	Understand
PART -B			
1.	(i) Explain the need for array variables. Describe the following with respect to arrays:- Declaration of array and accessing an array element. (8) (ii) Write a C program to re-order a one-dimensional array of numbers in descending order. (8)	BTL -1	Remember
2.	Write a C program to perform the following matrix operations: (i) Addition (5) (ii) subtraction (5) (iii) Scaling (6)	BTL -4	Analyze
3.	.Write a C program to calculate mean and median for an array of elements.(8+8)	BTL -5	Evaluate
4.	Write a C program for Determinant and transpose of a matrix.(8+8)	BTL -4	Analyze
5.	Describe the following with suitable examples. (8+8) (i) Initializing a 2 Dimensional Array(ii) Memory Map of a Dimensional Array.	BTL -2	Understand
6.	Explain about the String Arrays and its manipulation in detail (16)	BTL -1	Remember
7.	.(i). Write a C program to find average marks obtained by a of 30 students in a test.(10) (ii).Write short notes on Reading and Writing string. (6)	BTL -3	Apply
8.	Write a C program to sort the n numbers using selection sort (16)	BTL -2	Understand
9.	Develop a C program to search an element from the array. (16)	BTL -6	Create

10.	Describe the following functions with examples. (4+4+4+4) (i) strlen() (ii) strcpy() (iii)strcat() (iv)strcmp()	BTL -1	Remember
11.	Write a C program to find whether the given string is palindrome or not without using string functions. (16)	BTL -3	Apply
12.	Write a C program to count the number of characters, spaces, vowels, constants and others using string functions. (16)	BTL -2	Understand
13.	Discuss about the following :- (i).Advantages and disadvantages of linear and binary search.(8) (ii).Discuss briefly runtime initialization of a two dimensional array.(8)	BTL -1	Remember
14.	Explain about the following : (i).String and character array.(6) (ii).Initialising a string variables.(4) (iii).String input and output (6)	BTL -4	Analyze



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UNIT III-FUNCTIONS AND POINTERS			
Introduction to functions: Function prototype, function definition, function call, Built-in functions (string functions, math functions) – Recursion – Example Program: Computation of Sine series, Scientific calculator using built-in functions, Binary Search using recursive functions – Pointers – Pointer operators – Pointer arithmetic – Arrays and pointers – Array of pointers – Example Program: Sorting of names – Parameter passing: Pass by value, Pass by reference – Example Program: Swapping of two numbers and changing the value of a variable using pass by reference.			
PART - A			
Q.No	Questions	BT Level	Competence
1.	Define pointer. How will you declare it?	BTL -1	Remember
2.	What is a pointer to a pointer?	BTL -1	Remember
3.	Express the operations that can be performed on pointers.	BTL -2	Understand
4.	What is pointer arithmetic?	BTL -1	Remember
5.	What is a void pointer and a null pointer?	BTL -1	Remember
6.	Differentiate between address operator and indirection operator?	BTL -4	Analyze
7.	Why is pointer arithmetic not applicable on void pointers?	BTL -2	Understand
8.	Identify the use of Pointer.	BTL -1	Remember
9.	Point out the meaning of user-defined function.	BTL -4	Analyze
10.	What is meant by library function?	BTL -4	Analyze
11.	Write the syntax for function declaration	BTL -3	Apply
12.	Compose the two parts of function definition.	BTL -6	Create
13.	What is meant by pass by value and pass by reference?	BTL -3	Apply
14.	What is a function call? Give an example of a function call.	BTL -3	Apply
15.	Invent the meaning of default arguments and command line arguments.	BTL -6	Create
16.	What is a recursive function?	BTL -2	Understand

17.	Specify the need for function.	BTL -5	Evaluate
18.	Assess the meaning of function pointer.	BTL -5	Evaluate
19.	What is array of pointer?	BTL -1	Remember
20.	Mention the advantage of pass by reference.	BTL -2	Understand
PART – B			
1.	Describe about pointers and their operations that can be performed on it.(16)	BTL -1	Remember
2.	What is an array of pointers and what is pointer to an array? Explain in detail with example(16)	BTL -4	Analyze
3.	Demonstrate about function declaration and function definition. (16)	BTL -3	Apply
4.	Discuss about the classification of functions depending upon their inputs and output (parameters)(16)	BTL -2	Understand
5.	Explain in detail about Pass by Value and Pass by reference. (16)	BTL -1	Remember
6.	Discuss about passing arrays to function. (16)	BTL -2	Understand
7.	Explain in detail about recursive function with sample code. (16)	BTL -5	Evaluate
8.	Explain in detail about function pointers. (16)	BTL -4	Analyze
9.	Write notes on fixed argument functions and variable argument functions. (16)	BTL -1	Remember
10.	What are the applications of recursive function? Computation of Sine series using C program. (16)	BTL -3	Apply
11.	Write a C program for Scientific calculator using built-in functions(16)	BTL -4	Analyze
12.	Write a C program for Swapping of two numbers and changing the value of a variable using pass by reference(16)	BTL -1	Remember
13.	Write a C program to sort the given N names. (16)	BTL -2	Understand
14.	Explain any eight build in functions of math. (16)	BTL -6	Create

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UNIT-IV-STRUCTURES			
SYLLABUS			
Structure - Nested structures – Pointer and Structures – Array of structures – Example Program using structures and pointers – Self referential structures – Dynamic memory allocation - Singly linked list - typedef			
PART – A			
Q.No	Questions	BT Level	Competence
1.	What is structure? Write the syntax for structure.	BTL -1	Remember
2.	Write the various operations on structure.	BTL -1	Remember
3.	How the members of structure object is accessed?	BTL -2	Understand
4.	Write the use of size operator on structure.	BTL -1	Remember
5.	What is a nested structure?	BTL -1	Remember
6.	How typedef is used in structure?	BTL -4	Analyze
7.	Interpret the term Union in C.	BTL -2	Understand
8.	What is mean by Self referential structures.	BTL -1	Remember
9.	Point out the meaning of Dynamic memory allocation.	BTL -4	Analyze
10.	Mention any two application linked list.	BTL -4	Analyze
11.	What is the need for typedef ?	BTL -3	Apply
12.	Generalize the operators used in access the structure members.	BTL -6	Create
13.	Discover the meaning of Array of structure.	BTL -3	Apply
14.	Show the difference between Structure from Array.	BTL -3	Apply
15.	Invent the application of size of operator to this structure. Consider the declaration: struct { char name; int num; } student;	BTL -6	Create

16.	Show a structure called ID_Card to hold the details of a student.	BTL -2	Understand
17.	Summarize the different types of memory allocation functions.	BTL -5	Evaluate
18.	Discriminate between malloc and calloc.	BTL -5	Evaluate
19.	If we have structure B nested inside structure A, when do we declare structure B?	BTL -1	Remember
20	How to create a node in singly linked list?	BTL -2	Understand
PART – B			
1.	Describe about the functions and structures. (16)	BTL -1	Remember
2.	Explain about the structures and its operations. (16)	BTL -2	Understand
3.	Demonstrate about pointers to structures, array of structures and nested structures.(5+6+5)	BTL -3	Apply
4.	Write a C program using structures to prepare the students mark statement. (16)	BTL -2	Understand
5.	Write a C program using structures to prepare the employee pay roll of a company. (16)	BTL -2	Understand
6.	Write a C program to read the details of book name, author name and price of 200 books in a library and display the total cost of the books.(16)	BTL -1	Remember
7.	(i).What is a structure? Express a structure with data members of various types and declare two structure variables. Write a program to read data into these and print the same. (10) (ii).Justify the need for structured data type.(6)	BTL -3	Apply
8.	(i).What is the need for structure data type? Does structure bring additional overhead to a program? Justify. (10) (ii). Write short note on structure declaration(6)	BTL -1	Remember
9.	(i).How to Accessing the structure member through pointer using dynamic memory allocation.(8) (ii). Referencing pointer to another address to access the memory(8)	BTL -6	Create
10.	Explain with an example the self-referential structure. (16)	BTL -4	Analyze
11.	Explain singly linked list and write C Program to Implement Singly Linked List using Dynamic Memory Allocation. (16)	BTL -5	Evaluate
12.	Discuss about the following :- (i).Singly linked list and operation.(8) (ii).Advantage and disadvantage of Singly linked list.(8)	BTL -4	Analyze
13.	Illustrate a C program to store the employee information using structure and search a particular employee details. (16)	BTL -1	Remember

14.	Define a structure called student that would contain name, regno and marks of five subjects and percentage. Write a C program to read the details of name, regno and marks of five subjects for 30 students and calculate the percentage and display the name, regno, marks of 30 subjects and percentage of each student.(16)	BTL -4	Analyze
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UNIT-V- FILE PROCESSING			
Files – Types of file processing: Sequential access, Random access – Sequential access file - Example Program: Finding average of numbers stored in sequential access file - Random access file -Example Program: Transaction processing using random access files – Command line arguments			
PART – A			
Q.No	Questions	BT Level	Competence
1.	Define file.	BTL -1	Remember
2.	Mention different type of file accessing.	BTL -1	Remember
3.	Distinguish between Sequential access and Random access.	BTL -2	Understand
4.	What is meant by command line argument.? Give an example.	BTL -1	Remember
5.	List out the various file handling function.	BTL -1	Remember
6.	Compare fseek() and ftell() function.	BTL -4	Analyze
7.	How to create a file in C ?	BTL -6	Create
8.	Identify the various file operation modes and their usage .	BTL -1	Remember
9.	How to read and write the file.?	BTL -4	Analyze
10.	Compare the terms Field, Record and File.	BTL -4	Analyze
11.	Examine the following:- (i) getc() and getchar() (ii) scanf and fscanf()	BTL -3	Apply
12.	Distinguish between following:- (i).printf() and fprintf() (ii).feof() and ferror()	BTL -2	Understand
13.	Mention the functions required for Binary file I/O operations.	BTL -3	Apply
14.	Identify the different types of file.	BTL -3	Apply
15.	Identify the difference between Append and Write Mode.	BTL -1	Remember
16.	What is the use of rewind() functions.	BTL -2	Understand
17.	Write a C Program to find the Size of a File.	BTL -5	Evaluate
18.	Write the Steps for Processing a File	BTL -5	Evaluate

19.	Write a code in C to defining and opening a File.	BTL -6	Create
20	Why do we use command line arguments in C?	BTL -2	Understand
PART – B			
1.	Describe the following file manipulation functions with examples.(16) a) rename().(2) b) freopen().(4) c) remove().(2) d) tmpfile(void).(4) e) fflush().(4)	BTL -1	Remember
2.	Distinguish between the following functions.(16) a) getc() and getchar().(4) b) scanf() and fscanf().(4) c) printf() and fprintf().(4) d) feof() and ferror().(4)	BTL -2	Understand
3.	Illustrate and explain a C program to copy the contents of one file into another.(16)	BTL -3	Apply
4.	Explain the read and write operations on a file with an suitable program.(16)	BTL -2	Understand
5.	Describe the various functions used in a file with example.(16)	BTL -1	Remember
6.	Write a C Program to print names of all Files present in a Directory.(16)	BTL -1	Remember
7.	Write a C Program to read content of a File and display it. (16)	BTL -3	Apply
8.	Write a C Program to print the contents of a File in reverse.(16)	BTL -2	Understand
9.	Write a C Program Transaction processing using random access files.(16)	BTL -6	Create
10.	Write a C program Finding average of numbers stored in sequential access file.(16)	BTL -4	Analyze
11.	Explain about command line argument with suitable example.(16)	BTL -5	Evaluate
12.	Compare Sequential access and Random access file .(16)	BTL -4	Analyze
13.	Write a C Program to calculate the factorial of a number by using the command line argument.(16)	BTL -1	Remember
14.	Write a C Program to generate Fibonacci series by using command line arguments.(16)	BTL -4	Analyze