Code No: **R231107** **R23** **SET - 1**

I B. Tech I Semester Regular Examinations, January- 2024
INTRODUCTION TO PROGRAMMING

(Common to All Branches)

Time: 3 hours Max. Marks: 70

*Note: 1. Question paper consists of two parts (**Part-A** and **Part-B**)*
*2. All the questions in **Part-A** is Compulsory*
*3. Answer **ONE** Question from **Each Unit** in **Part-B***

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PART –A (20 Marks)

1.	a)	What is the difference between compiler and interpreter?	[2M]
	b)	What are the essential steps in the development an algorithm?	[2M]
	c)	Give the differences between while and do-while statements.	[2M]
	d)	Define scope and life time of a variable.	[2M]
	e)	How does the C language handle the values in an array internally?	[2M]
	f)	What is an array variable? How it is different from ordinary variable?	[2M]
	g)	Why addition of two pointers is impossible?	[2M]
	h)	What is dangling pointer?	[2M]
	i)	List the Dynamic memory management functions in C programming.	[2M]
	j)	What are the advantages with bit fields?	[2M]

PART – B (50 MARKS)

UNIT-I

2.	a)	Develop a flowchart for calculating area of an equilateral triangle. Area of equilateral triangle is computed by formula A= $(\sqrt{3}/4)\ a^2$, where 'a' is length of side of triangle.	[5M]
	b)	Explain different data types supported by C language with their memory requirements.	[5M]

(OR)

3	a)	Develop an algorithm to print the Fibonacci series.	[5M]
	b)	List out the various category of operators available in C? Give examples.	[5M]

UNIT-II

4.	a)	Differentiate between while and for statement with an example.	[5M]
	b)	Write a C program to calculate m^n value using while and do while loop.	[5M]

(OR)

5.	a)	Differentiate between break and continue statements.	[5M]
	b)	Develop a program to check whether the given number is Armstrong number or not.	[5M]

UNIT-III

6.	a)	Explain how arrays are passed as function arguments with an example.	[5M]
	b)	Define string. Explain about string operations with examples.	[5M]

(OR)

7.	a)	Develop a program to find the length of the string without using predefined functions.	[5M]
	b)	Develop a program to read and print the element in the given array.	[5M]

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UNIT-IV

8. a) Explain Pointer Arithmetic with suitable example. [5M]

   b) Explain about declaration, initialization and accessing of structures. And also discuss about complex structures. [5M]

(OR)

9. a) Write a C program to sort an array using pointers. [5M]

   b) Explain the concepts used in the given program and write the output. [5M]

```
main() {
int m[2]={100,200};
int a,b,c,*p=m; a=*p;
      b=*(p+1); c=(*p+1);
printf("%d %d %d", a,b,c);
}
```

UNIT-V

10. a) Write a C program to copy the contents of a text file to another file. Pass the filename using command line arguments. [5M]

    b) Differentiate the call by value and call by reference mechanism with examples. [5M]

(OR)

11. a) Develop a C program to find sum of 'n' Elements entered by user. To perform this program, allocate memory dynamically Using malloc() function. [5M]

    b) How do you define the scope of a variable? Illustrate with a Program. [5M]

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*3. Answer **ONE** Question from **Each Unit** in **Part-B***

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PART –A (20 Marks)

1.	a)	Define flowchart. Explain with an example.	[2M]
	b)	Write the general structure of C.	[2M]
	c)	List all conditional control statements used in C.	[2M]
	d)	Write syntax of if, if-else and nested if-else statements in C program.	[2M]
	e)	What is array? Explain the declaration and initialization of one dimensional array.	[2M]
	f)	Define string. How string is declared and initialized?	[2M]
	g)	What is function? List the type of functions available in C Language.	[2M]
	h)	Define a recursion give one example function.	[2M]
	i)	What is structure? Explain the C syntax of structure declaration.	[2M]
	j)	What is pointer? Explain how the pointer variable declared and initialized?	[2M]

PART – B (50 MARKS)

UNIT-I

2.	a)	Explain the features following: (i) Machine language (ii) Assembly level language (iii) High level language (iv) Basic Computer Program	[5M]
	b)	Write algorithm and draw a flow chart for reversing a given number.	[5M]

(OR)

3	a)	Write about basic input output operations and determine the value of the following 'C' expressions.
		int x = 5,y,z;
		y = x + +;
		z = + + x;
		print f("%d %d ", x, y, z);
			[5M]

	b)	Write a short notes on the following Problem solving strategies i) Top down Approach ii) Bottom Up Approach.	[5M]

UNIT-II

4.	a)	Develop a program to check whether the given number is prime number or not.	[5M]
	b)	Differentiate between counter control and conditional control statements in C.	[5M]

(OR)

5.	a)	Develop a program that asks user an arithmetic operator ('+', '-', '*' or '/') and two operands and perform the corresponding calculation on the operands. Use a switch statement.	[5M]
	b)	How does a switch statement works? List the difference between switch and if else ladder statement.	[5M]

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UNIT-III

6. a) Develop program to find the average of smallest and largest numbers in a given array. [5M]
   b) What is string palindrome? Develop a program to check whether the given string is palindrome or not. [5M]

(OR)

7. a) Develop a program to search the key element in the given list. [5M]
   b) Develop a program to implement string operations by using string handling functions. [5M]

UNIT-IV

8. a) Develop a C program to swap two numbers using pointers. [5M]
   b) What is a pointer variable? How is a pointer variable different from an ordinary Variable? [5M]

(OR)

9. a) How to pass pointer variables as function arguments? Explain with examples. [5M]
   b) Develop a C program to declare a structure with the following elements and for accessing them. 1. Name. 2. Age. 3. University. [5M]

UNIT-V

10. a) Define dynamic memory. Describe the functions to allocate dynamic memory. [5M]
    b) What is a File? Explain fopen() and fclose() functions with suitable examples. [5M]

(OR)

11. a) Develop a program to calculate the factorial of a given number using recursion. [5M]
    b) Write a note on File and briefly explain various operations on files with examples. [5M]

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PART –A (20 Marks)

1.	a)	What is the variable? Illustrate with an example.	[2M]
	b)	What are the basic steps involved in writing a computer program?	[2M]
	c)	What are the types of looping statements available in C.	[2M]
	d)	Give the differences between entry controlled and exit controlled loops.	[2M]
	e)	Explain about Actual and Formal parameters.	[2M]
	f)	Why is it necessary to give the size of an array in an array declaration?	[2M]
	g)	Mention the various String Manipulation Functions in C.	[2M]
	h)	What is the difference between a pointer and dangling pointer?	[2M]
	i)	Compare structures and unions.	[2M]
	j)	What is the difference between *fscanf() and fprintf()*? Give an example.	[2M]

PART – B (50 MARKS)

UNIT-I

2.	a)	Give the block diagram of a computer. Explain functionality of each component.	[5M]
	b)	Define algorithm? Write the characteristics of an algorithm. Give example.	[5M]

(OR)

3	a)	Write a program to find the factorial of a given number and analyze its time complexity.	[5M]
	b)	Explain about relational and logical operators and write a C program by using these operators.	[5M]

UNIT-II

4.	a)	Write about nested for loop statement with examples.	[5M]
	b)	Write program to check whether the given integer is palindrome or not by using for loop.	[5M]

(OR)

5.	a)	What are selection statements? What is the necessity of selection statements? Explain.	[5M]
	b)	Develop a C program to check whether a number entered by user is even or odd. Use if else statement.	[5M]

UNIT-III

6.	a)	Develop a program to count sum of even numbers in a given array.	[5M]
	b)	Develop a program to append the one string to another string without using predefined functions.	[5M]

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(OR)

7. a) Write the concepts of arrays and illustrate different dimensions defined on array with example. [5M]

   b) Develop a C program to multiply two 'm × n' matrices. Cover all necessary conditions. [5M]

UNIT-IV

8. a) Define Structure? Explain how to declare a structure, accessing structure members with an example program. [5M]

   b) Explain the array of pointers with example. [5M]

(OR)

9. a) Develop a program using pointers to read in an array of integers and print its elements in reverse order. [5M]

   b) Define the union and write a program to declare and access the union members. Consider employee details as an example. [5M]

UNIT-V

10. a) Develop a C program to count the number of characters in a file. [5M]

    b) What is the difference between iterative and recursive functions. Explain with finding factorial. [5M]

(OR)

11. a) Illustrate the concepts of functions calls and return types. [5M]

    b) Define File? Briefly explain various operations on files with examples. [5M]

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*2. All the questions in **Part-A** is Compulsory*
*3. Answer **ONE** Question from **Each Unit** in **Part-B***

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PART –A (20 Marks)

1.	a)	What is Ternary operator and Conditional operator?	[2M]
	b)	Define keyword, constant and variable.	[2M]
	c)	How switch case works without break statement?	[2M]
	d)	Write the syntax of looping statements.	[2M]
	e)	What is multi-dimensional array?	[2M]
	f)	Write and explain the syntax of function?	[2M]
	g)	What is pointer to pointer?	[2M]
	h)	Discriminate putchar() and getchar()	[2M]
	i)	Define Union? How to represent a union?	[2M]
	j)	Write about different error handling functions on files.	[2M]

PART – B (50 MARKS)

UNIT-I

2.	a)	What is a programming language? Why C language is called as Middle level programming language? Explain	[5M]
	b)	Define flowchart? How it is useful in writing the programs? Explain about different symbols in Flow chart? Give Example.	[5M]

(OR)

3	a)	Explain about Compiler, Interpreter, and Assembler.	[5M]
	b)	Define variable? What are the rules for declaring the variables?	[5M]

UNIT-II

4.	a)	Differentiate between While and do-While loops with an example.	[5M]
	b)	Develop a program to calculate the sum of digits in a given number by using while loop.	[5M]

(OR)

5.	a)	Differentiate the conditional operator with if else statement. Explain with the help of an example.	[5M]
	b)	Illustrate the use of special control constructs goto, break, continue and return.	[5M]

UNIT-III

6.	a)	Write a C program to calculate the sum and difference of two 2-dimensional Matrices.	[5M]
	b)	Explain the following string handling functions: (i) strcpy( ) (ii) strlen( ) (iii)strcat( ) (iv) strcmp( )	[5M]

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(OR)

7. a) Write a program to find second highest and smallest number in the given array. [5M]
   b) Illustrate the string operations: i) Copying the string ii) Reversing the string iii) Update the Characters in string iv) Finding the string length [5M]

UNIT-IV

8. a) List the difference between structures and unions. Explain with an example. [5M]
   b) Write a program to show the subject registration for an exam by the student using structures. [5M]

(OR)

9. a) Define a pointer in C language? Explain about NULL character. [5M]
   b) How structure is different form an array? Explain with program. [5M]

UNIT-V

10. a) Distinguish user defined and predefined function. Explain with one example. [5M]
    b) Develop a C program to append the contents of one file to another file. [5M]

(OR)

11. a) Develop a program to find the given number is prime or not using functions. [5M]
    b) List out modes of operations to open a file. [5M]

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