Bundelkhand Institute of Engineering and Technology, Jhansi

Department of Computer science & Engineering

Class Test 1 (2021-2022)

B.Tech II Semester (Electrical Engineering) + Chemical Engg.

Sub Code: KCS-201T **Sub: Programming for Problem Solving**

Time: 1 Hours **Max. Marks: 15**

INSTRUCTION: **Roll No.** 2100430200024

Attempt any three questions with suitable Example and Diagram.

Q. No.	Question	Marks	CO
1	What is high level language? Differentiate among Compiler, assembler and interpreter.	05	01
2	Write the meaning of symbols used in flowchart. Draw a flow chart to find average of three input numbers.	05	01
3	What are fundamental data types in C language? Discuss each briefly.	05	01
4	What are relational operator and logical operator? Explain with example.	05	02
5	Write a C program to find minimum out of three input numbers.	05	02

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Class Test 1I (2021-2022)

B.Tech II Semester(Electrical Engineering)

Sub Code: KCS-201T **Sub: Programming for Problem Solving**

Time: 1 Hours **Max. Marks: 15**

INSTRUCTION: **Roll No.**

Attempt any three questions with suitable Example and Diagram.

Q. No.	Question	Marks	CO
1	With a suitable example explain the process of converting "for loop" into "while loop".	05	03
2	Explain Structure with an example. Differentiate Structure with array.	05	04
3	What is string? Differentiate string with array of characters.	05	04
4	What are actual parameters and formal parameters? Explain with example.	05	03
5	Write a program for Bubble sort.	05	04

Class Test 2

Subject Name: Programming for Problem Solving **Subject Code: KCS-201T**
Branch: ECE and CHE **Semester: 2nd**
Time: 1-hour **Max Marks: 15**

Note: Attempt any 3 questions. Please answer every question with a proper explanation.

1. What is the difference between Call by value and Call by reference with a suitable example? Write the C function to swap two numbers (take the numbers as user input) using Call by reference. 2+3
CO3

2. Consider the following array A and answer the following questions. 2+3

3	6	9	12	15	17	18	20	25	28	31	34	36

   a. List all the numbers in this array that will require the largest number of key comparisons when searched by Binary Search.
   b. Find the average number comparison made by binary search in a successful search in the array (Assume that each number is searched for with the same probability).
CO4

3. Write down the Algorithm of Insertion sort. The usual implementation of Insertion Sort to sort an array uses linear search to identify the position where an element is to be inserted into the already sorted part of the array. If instead, we use a binary search approach to identify the position. **"Will binary search approach improve the performance of Insertion sort or not?"** explain it with suitable reason. 3+2
CO4

4. Explain Pointers in C language with suitable example. Find the output of the following code

```
int f( int x, int * py, int ** ppz) {
    int y, z;
    ** ppz += 1;
    z = ** ppz;
    * py += 2;
    y = * py;
    x += 3;
    return x + y + z;
}
void main() {
    int c,* b,** a;
    c = 4;
    b = &c;
    a = &b;
    printf("%d ", f(c,b,a));
    return 0;
}
```

2+3
CO3

Total Number of Printed Pages:02

KCS 101T

(Roll No. to be filled by candidate)

2	1	0	0	4	3	0	1	3	0	0

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B. TECH.
FIRST SEMESTER THEORY EXAMINATION, 2021-22
KCS-101T
PROGRAMMING FOR PROBLEM SOLVING

Time: 03 Hours **Max. Marks: 100**

Note:

- Attempt all questions. All questions carry equal marks.
- Assume missing data suitably.

1.	Attempt any ***FOUR*** parts of the following:	4×5	CO
a.	Explain with figure the architecture of CPU.		CO1
b.	Differentiate between Compiler and Interpreter.		CO1
c.	Draw a flow chart to decide whether given no. is even or odd. Explain where necessary.		CO1
d.	Write short note on High level language, Assembly language and Machine language.		CO1
e.	Write steps to create executable code in C language.		CO1
f.	Explain Fundamental data types in C language.		CO1
2.	Attempt any ***TWO*** parts of the following:	2×10	CO
a.	Explain the working of if – else statement using a program of finding largest out of three numbers.		CO2
b.	Explain with proper example the difference between unary, binary and Ternary expressions in C language.		CO2
c.	Write a program to print digits from 0 to 9 into words using switch-case-default. Example Two for 2, Three for 3 etc.		CO2

3.	Attempt any ***TWO*** parts of the following:	2×10	CO
a.	Explain the working of "while" and "for" loop using proper example. Write code fragment to convert "for" loop into "while" loop and explain the process.		CO3
b.	Differentiate between "Call by Value" and "Call by Reference" by using code for swapping of two numbers in C language.		CO3
c.	What is Recursion? Write a program to calculate factorial of a number in C language.		CO3
4.	Attempt any ***TWO*** parts of the following:	2×10	CO
a.	What is array? Explain the organization of two dimensional array by writing a program for addition of two matrices of 3x3 order.		CO4
b.	What is Structure and how is it different from Union. Use C language code for explanation.		CO4
c.	Write a function in C for Binary search. Discuss its time complexity.		CO4
5.	Attempt any ***TWO*** parts of the following:	2×10	CO
a.	What is Dynamic memory allocation? Explain malloc(), calloc(), and free () function.		CO5
b.	With the help of small code fragment , explain the file handling process in C.		CO5
c.	What are C preprocessor directives? Explain their utility in C language. Write macro definitions with arguments for calculation of area of a circle.		CO5

Total Number of Printed Pages: 02

KCS-201T

(Roll No. to be filled by candidate)									

B. TECH.
SECOND SEMESTER THEORY EXAMINATION, 2021-22
KCS-201T
PROGRAMMING FOR PROBLEM SOLVING

Time: 03 Hours **Max. Marks: 100**

Note:

- Attempt all questions. All questions carry equal marks.

1.	Attempt any ***FOUR*** parts of the following:	4×5	CO
	a. Draw the memory hierarchical structure of a computer system. Explain each memory unit in brief.		CO1
	b. Describe compiler, interpreter, and assembler. Write the names of compiler that are used in C programming.		CO1
	c. Draw a flowchart to find prime numbers between 101 and 999.		CO1
	d. Describe various storage classes' supports in C, with suitable example.		CO1
	e. What are the objectives and major functions of an operating system?		CO1
	f. Describe the standard I/O function in C.		CO1
2.	Attempt any ***FOUR*** parts of the following:	4×5	CO
	a. Write a program in C to find greatest number among three numbers using conditional operators.		CO2
	b. What are the different types of operators? Explain in detail.		CO2
	c. Write a short note on operator precedence and associativity in C language.		CO2
	d. Writes a program to determine whether the year is a leap year or not (year is input through the keyboard).		CO2
	e. What is the role of switch statement in C programming language? Explain with example.		CO2

f. Differentiate between nested- if and switch statements in C with example. CO2

3. Attempt any ***TWO*** parts of the following: 2×10 CO

a. Write a program to check the number is palindrome or not. The program should accept any arbitrary number typed by user. CO3

b. Write a program in C language to generate the Fibonacci series. CO3

c. Describe about the types of looping statements in C with necessary syntax. CO3

4. Attempt any ***TWO*** parts of the following: 2×10 CO

a. (i). Write down the algorithm of binary search technique and complexity of the algorithm. CO4
(ii). what is the difference between sequential search and binary search technique?

b. Define a structure. Write a program in C to create a database of ten students to store personal details such as roll number, name and marks. Print all the details of students whose name is entered by the user. CO4

c. Write a program to multiply two matrices (read size and number of element of matrices from the keyboard). CO4

5. Attempt any ***TWO*** parts of the following: 2×10 CO

a. What do you mean by dynamic memory allocation? Explain the malloc() and calloc() function in detail. CO5

b. List out various file operations in C. Write a C program to count the number of characters in file. CO5

c. Write a program in C to reverse a string through pointer. CO5