Guru Nanak Dev Engineering College, Ludhiana			
Department of Applied Sciences			
Program	B.Tech.CSE, IT	**Semester**	I
Subject Code	ESE-104	**Subject Title**	Programming for Problem Solving
Test	2	**Course Coordinator(s)**	Ranjodh Kaur, Siddharth Jain, Gagneet Kaur, Kapil Sharma,Jaswant Singh,Sita Rani, Kuljit Kaur
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of Test	16th October, 2023	**Roll Number**	

Note: Attempt all questions. All assumptions must be clearly stated.

Q. No.	Question	MM
Q1	Briefly illustrate semantic and logical errors with the help of examples.	2

Q2	What will be the output for the following code snippet:
	`int main ( )`
	`{`
	`int i=1,j=1; int a = 0;`
	`int y; int x = 11; char c='A';`
	`y = sizeof(x++);`
	`printf("%l %i %l", y, x,sizeof(c));`
	`double d = 10.5;`
	`printf(" %lu", sizeof(a + d));`
	`for(i=1;i<=3;i++)`
	`{`
	`for(j=1;j<=3;j++)`
	`{`
	`if(++i ==2 || --j==2)`
	`{`
	`continue;`
	`}`
	`printf(" %d",i);`
	`printf(" %d",j);`
	`if(++i==4 || --j==3)`
	`{`
	`break;`
	`}`
	`}`
	`}`
	`printf(" %d",i);`
	`printf(" %d",j);`
	`return 0;`
	`}`
		2

Q3	Define flowchart. Construct a flowchart and write an algorithm to find how many times the digit **D** appears in the number N.	4
Q4	Differentiate between call by value and call by reference with the help of examples.	4
Q5	Create a user-defined function to find the square of any positive integer number read through the keyboard. Make use of parameter passing and return type concepts.	4
Q6	Develop a menu driven code that does the following: • If 'A' is entered, user-defined function **'isPalindrome'** must be able find whether number entered by user is palindrome or not. • If 'B' is entered, user-defined function **'kgToPounds'** must be able to convert kilograms to pounds, value to be converted must be read through the keyboard. (One kilogram is equal to 2.204 pounds). • If any other 'character' is entered, code must be able to terminate with a suitable message. **[Make use of parameter passing and return type concepts while developing code.]**	8

Guru Nanak Dev Engineering College, Ludhiana			
Department of Applied Sciences			
Program	B.Tech.CSE, IT	**Semester**	I
Subject Code	ESE-104	**Subject Title**	Programming for Problem Solving
Mid Semester Exam (MSE) No.	2	**Course Coordinator(s)**	Ranjodh Kaur, Siddharth Jain, Gagneet Kaur, Kapil Sharma,Jaswant Singh,Sita Rani, Kuljit Kaur
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	09th November, 2023	**Roll Number**	

Note: Attempt all questions. All assumptions must be clearly stated.

Q. No.	Question	MM
Q1	The elements of an array are given 32, 51, 27, 85, 66, 23, 13, 57. Identify and write the arrangement of elements after first pass of the bubble sort method.	2
Q2	How does a pointer store the memory address of a variable? Give example.	2
Q3	Compare in detail selection sort with insertion sort algorithm.	4
Q4	Provide a detailed explanation of the recursive process with the help of a user-defined function, describing how the function calls itself and terminates to solve a specific problem.	4
Q5	Given two matrices, the task is to multiply them. Matrices can either be square or rectangular. Write a program for this task.	4
Q6	Consider a scenario where you're tasked with managing student records using an array of structures in C. The structure **'Student'** contains the following fields: **studentID, name, age,** and **grade.** Write a program that allows the user to perform the following tasks: a) Input student details (ID, name, age, grade) for 'n' students (where 'n' is determined by the user). b) Display the details of all students in the record. c) Find and display the student(s) with the highest grade. In your program, implement functions for each of these tasks.	8

Guru Nanak Dev Engineering College, Ludhiana			
Department of Applied Sciences			
Program	B.Tech.CSE, IT	**Semester**	I
Subject Code	ESE-104	**Subject Title**	Programming for Problem Solving
Mid Semester Exam (MSE) No.	2	**Course Coordinator(s)**	Ranjodh Kaur, Siddharth Jain, Gagneet Kaur, Kapil Sharma,Jaswant Singh,Sita Rani, Kuljit Kaur
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	09th November, 2023	**Roll Number**	

Note: Attempt all questions. All assumptions must be clearly stated.

Q. No.	Question	MM
Q1	The elements of an array are given 32, 51, 27, 85, 66, 23, 13, 57. Identify and write the arrangement of elements after first pass of the bubble sort method.	2
Q2	How does a pointer store the memory address of a variable? Give example.	2
Q3	Compare in detail selection sort with insertion sort algorithm.	4
Q4	Provide a detailed explanation of the recursive process with the help of a user-defined function, describing how the function calls itself and terminates to solve a specific problem.	4
Q5	Given two matrices, the task is to multiply them. Matrices can either be square or rectangular. Write a program for this task using user-defined function(s).	4
Q6	Consider a scenario where you're tasked with managing student records using an array of structures in C. The structure **'Student'** contains the following fields: **studentID, name, age,** and **grade.** Write a program that allows the user to perform the following tasks: a) Input student details (ID, name, age, grade) for 'n' students (where 'n' is determined by the user). b) Display the details of all students in the record. c) Find and display the student(s) with the highest grade. In your program, implement user-defined functions for each of these tasks.	8

Guru Nanak Dev Engineering College, Ludhiana			
Department of Applied Sciences			
Program	B.Tech.CSE, IT	**Semester**	I
Subject Code	ESE-104	**Subject Title**	Programming for Problem Solving
Mid Semester Exam (MSE) No.	1	**Course Coordinator(s)**	Ranjodh Kaur, Siddharth Jain, Gagneet Kaur, Kapil Sharma,Jaswant Singh,Sita Rani, Kuljit Kaur
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	28th September, 2023	**Roll Number**	

Note: Attempt all questions. All assumptions must be clearly stated.

Q. No.	Question	COs, RBT level	MM
Q1	Differentiate between algorithm and pseudocode with the help of an example.	CO1, L2	2

Q2	What will be the output for the following code snippet:
	`int main ( )`
	`{`
	`int i=1,j=1;`
	`for(i=1;i<=3;i++)`
	`{`
	`for(j=1;j<=3;j++)`
	`{`
	`if(i ==2 && j==2)`
	`{`
	`printf("in continue");`
	`continue;`
	`}`
	`printf(" %d",i);`
	`printf(" %d",j);`
	`if(++i==4 || --j==5)`
	`{`
	`break;`
	`}`
	`}`
	`}`
	`printf(" %d",i);`
	`printf(" %d",j);`
	`return 0;`
	`}`
		CO4, L3	2

Q3	What goes behind the scene when you attempt to get an output from a source code in C programming language? Elaborate the process steps with the help of diagram.	CO2, L2	4
Q4	Given a number N and a digit D. Write a program to find how many times the digit D appears in the number N. (For example N is 13314, D is 3, answer will be 2. Value of N and D should be read through the keyboard and case must be processed if N and D are positive).	CO4, L3	4
Q5	"Initialization is always out of the loop", this statement given in double quotes is true for which loop(s); compare and contrast the identified loop(s) with other loop(s) in detail.	CO4, L4	4
Q6	Design a menu driven code that does the following: • If '1' is entered, user-defined function **'add'** must be able to add two positive numbers using a user-defined function • If '2' is entered, user-defined function **'multiplication'** must be able to print multiplication table of positive integer numbers from 1 to n. • If any other integer is entered, code must be able to terminate with a suitable message.	CO6, L6	8