SLOT: D2

Programme Name & Branch : B.Tech (CSE)

Course Name & Code: Structured and Object-Oriented Programming & BCSE102L

Class Number (s): VL202223050556

Faculty Name (s): A. HELEN SHARMILA

Exam Duration: 90 Min. **Maximum Marks: 50**

Q.No.	Question	Max Marks
1.	a) In the context of C programming, elaborate on the variations between three distinct looping mechanisms, each characterized by their unique control structures and execution flow. Please provide examples for each of these iterations to illuminate their differences. **(5)** b) In C operators, elucidate the notions of precedence and associativity, along with their implications for expression evaluation. Include examples that substantiate your explanations, ensuring that at least one instance demonstrates the significance of comprehending both precedence and associativity in accurately deciphering the outcome of an expression. **(5)**	10
2.	a) Within the domain of C programming, provide a comprehensive analysis of the characteristics that differentiate variables in terms of their memory allocation, variable visibility, and duration of accessibility. Provide instances that effectively demonstrate the unique properties of each variable type to aid in comprehension. **(5).** b) Elaborate on the nuances of call by value and call by reference when passing arguments to functions in C. Provide suitable examples**(5).**	10
3.	A weather station collects daily temperature data in Celsius for a month. Write a C program that reads the temperature data into a one-dimensional array and calculates the average temperature for the month. Additionally, find the number of days with a temperature above the average. Use user-defined functions for these calculations. **(10)**	10
4.	Develop a C program to manage a playlist of songs, where each song has a title and duration (in seconds). Use two separate dynamically allocated arrays to store the titles and durations. Implement user-defined functions to add, remove, update, and display the playlist information using pointer arithmetic. **(10)**	10
5.	a) Implement a function that receives two integer arrays and their sizes, and copies the elements from the first array to the second array in reverse order using pointers. Complete the TODO sections in the following code: **(5)** `#include <stdio.h>`	10

```
void copy_reverse(int *src, int *dest, int size);

int main() {
    int src[] = {1, 2, 3, 4, 5};
    int dest[sizeof(src) / sizeof(src[0])] = {0};
    int size = sizeof(src) / sizeof(src[0]);

    // TODO: Call the copy_reverse function
    // copy_reverse( ... );

    printf("Source array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", src[i]);
    }

    printf("\nDestination array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", dest[i]);
    }

    return 0;
}

void copy_reverse(int *src, int *dest, int size) {
    // TODO: Implement the copy_reverse function using
pointers
}
```

(b) Elaborate upon the method by which pointers facilitate the transfer of values between functions in the context of C programming? **(5)**