**Course**: CPSC 256: Programming in C/C++

**Duration**: 45 minutes

**Total Marks**: 50

**Instructions**: Answer all the questions in the spaces provided. Write clear and concise C code snippets where applicable. Ensure proper syntax and comments where necessary. For questions asking for explanations, write your answers in English.

**Question 1: Loops and Arrays (15 Marks)**

**A)** Write a for loop that prints the elements of an array of size 5. Assume the array is initialized with integer values.

*(7 Marks)*

**B)** Write a C program using a while loop that calculates the sum of integers from 1 to 50.

*(8 Marks)*

**Question 2: Code Explanation (10 Marks)**

**A)** Explain in plain English what the following C code does:

*(5 Marks)*

int arr[] = {5, 10, 15, 20, 25};

int sum = 0;

for(int i = 0; i < 5; i++) {

sum += arr[i];

}

("%d\n", sum);

**Explanation**:

**B)** Explain what the following code does, and describe what the output will be:

*(5 Marks)*

int x = 7;

int \*ptr = &x;

\*ptr = \*ptr + 3;

printf("%d\n", x);

**Explanation**:

**Question 3: Pointers and Structs (25 Marks)**

**A)** Write a C program to swap two integers using pointers.

*(10 Marks)*

**B)** Define a struct in C called Book with two fields:

• title (string of 50 characters)

• price (float)

Then write a C snippet to create a Book instance, initialize it, and print its details.

*(10 Marks)*