Course: CPSC 256: Programming in C/C++
Duration: 45 minutes
Total Marks: 50

Allowed Materials: Blank scrap paper, writing implements ... no other materials/devices (including phone, laptop, etc.) are allowed.

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 code snippet that uses a for loop to get 6 integer values from the keyboard and stores these values in the elements of an array of size 6. Assume the array has already been defined. *(7 Marks)*

B) Write a C program using a while loop that calculates the product of the integers between 1 and 20, inclusive, i.e. 20*19*18*17 .... *2*1. *(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];
}
printf("%d\n", sum);
```

Explanation:

B) Explain what the following code does, and describe what the output will be:
(5 Marks)

```c
int i = 8;
int* p = &i;
*p = *p*2 ;
printf("%d\n", i);
```

Explanation:

Question 3: Pointers and Structs (25 Marks)

A) Write a C function to swap two integers using pointers.
(10 Marks)

B) Define a struct in C called Restaurant with three fields:

- name (string of 20 characters)
- cuisine (string of 20 characters)
- rating (int)

Then write a C snippet to create a Restaurant instance, initialize it, and print its details.
(10 Marks)