Student Name:
Student Number:

Dept. of Computer Engineering
Second Exam, Second Semester: 2010/2011

| Course Title: | Programming Language | Date: | 12/05/2011 |
| :--- | :--- | :--- | :--- |
| Course No: | 630203 | Time Allowed: | 1 Hour |
| Lecturer: | Dr. Qadri Hamarsheh | No. Of Pages: | 3 |

## Information for Candidates

1.This examination paper contains 3 questions totaling 15 marks.
2.The marks for the questions are:

Question 1 (6 marks), Question 2 (3 marks), Question 3 (6 marks),

## Advice to Candidates

1. You should attempt ALL requested parts.
2. You should write your answers clearly.

Basic notions: The aim of the questions in this part is to evaluate the required minimal student knowledge and skills. Answers in the pass category represent the minimum understanding of basic concepts of $C++$ programming language concept: Standard (predefined) functions, User-Defined Functions, void functions and value and reference parameters.

## Question 1

(6 marks)

## Multiple Choices

Identify the choice that best completes the statement or answers the question.

1. A variable listed in a function call is known as a(n) $\qquad$ parameter. A variable list in a header is known as a(n) $\qquad$ parameter.
a. actual; actual
c. actual; formal
b. formal; formal
d. formal; actual
2. If an \& is attached after the data type of a formal parameter, then the formal parameter is a
$\qquad$ .
```
a. value parameter
c. global variable
b. reference parameter
d. default variable
```

3. What value is returned by the following return statement?
```
int x = 5;
return x + 1;
```

a. 0
b. 5
c. 6
d. 7
4. Given the following function:

```
int strange(int x, int y)
{
        if (x > y)
            return x + y;
        else
            return x - y;
}
```

What is the output of the following statement?

```
cout << strange(4, 5) << endl;
a. -1 c. 9
b. 1
d. 20
```

5. Given the function prototype:
float test (int, int, int);
which of the following statements is legal?
```
a. cout << test(7, test(14, 23));
b. cout << test(test(7, 14), 23);
c. cout << test(14, 23);
d. cout << test(7, 14, 23);
```

6. Which of the following is a legal $\mathrm{C}++$ function definition?
```
a. void funcTest(int& u, double& v)
    {
        cout << u << " " << v << endl;
    }
b. void funcTest(int& u, double& v);
    {
        cout << u << " " << v << endl;
    }
c. void funcTest(int& u, double& v)
    (
        cout << u << " " << v << endl
    )
d. void funcTest(int& u, double& v)
    [
        cout << u << " " << v << endl;
    ]
```

Familiar problems solving: the aim of the questions in this part is to evaluate that the student has some basic knowledge of the key aspects of the lecture material and can attempt to solve familiar problems of $C++$ programming language concept: Standard (predefined) functions, User-Defined Functions, void functions and value and reference parameters

## Question 2

What is the output of the following C++ code?

| Code | Output |
| :---: | :---: |
| ```#include <iostream> using namespace std; int foo(int& x, int y); int foo(int& X); int main() { int b = 2; int c = 1; cout << "Program Start.\n"; b = foo(c); cout << b << endl; cout << c << endl; cout << "Program End.\n"; return 0; } int foo(int& x, int y) { cout << "x = " << x << endl; cout << "y = " << y << endl; return x + y * 6; } int foo(int& x) { cout << "X = " << foo(X, 2) << endl; x += 2; return X + 1;``` |  |
|  |  |

## Ouestion 3

Write a program that takes as input five numbers and outputs the mean (average) and standard deviation of the numbers. If the numbers are $x 1, x 2, x 3, x 4$, and $x 5$.
Then the mean is

$$
M=\frac{(x 1+x 2+x 3+x 4+x 5)}{5}
$$

And the standard deviation is:

$$
S=\sqrt{\frac{(x 1-M)^{2}+(x 2-M)^{2}+(x 3-M)^{2}+(x 4-M)^{2}+(x 5-M)^{2}}{5}}
$$

Your program must contain at least the following functions:
$>$ a function that calculates and returns the mean
$>$ and a function that calculates the standard deviation.

## Good Luck

