

Philadelphia University

Faculty of Engineering



Student Name:

Student Number:

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

<b>Course Title:</b>	Programming Language	<b>Date:</b>	03/05/2011
<b>Course No:</b>	630203	<b>Time Allowed:</b>	1 Hour
<b>Lecturer:</b>	Dr. Qadri Hamarsheh	<b>No. Of Pages:</b>	2

**Information for Candidates**

1. This examination paper contains 4 questions totaling 15 marks.

2. The marks for the questions are:

Question 1 (5 marks), Question 2 (2 marks), Question 3 (3 marks), Question 4 (5 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**

(5 marks)

**Multiple Choices**

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

- 1) There are two types of \_\_\_\_ parameters: value parameters and reference parameters.
- a. formal
  - b. actual
  - c. active
  - d. passive

- 2) The statement: `return 8, 10;` returns the value \_\_\_\_.
- a. 8
  - b. 10
  - c. 18
  - d. 80

- 3) Given the following function:
- ```
int next(int x)
{
    return (x + 1);
}
```
- what is the output of the following statement?
- ```
cout << next(next(5)) << endl;
```
- a. 5
  - b. 6
  - c. 7
  - d. 8

- 4) Suppose that `printHeading` is a function without any parameters. Which of the following is a valid function heading?
- a. `void printHeading();`
  - b. `void printHeading()`
  - c. `void printHeading(noParameters);`
  - d. `void printHeading(void)`

5) Suppose that you have the following function.

```
void mystery(int& one, int two)
{
    int temp
    temp = one;
    one = two;
    two = temp;}

```

What are the values of `x` and `y` after the following statements? (Assume that variables are properly declared.)

```
x = 10; y = 15;
mystery(x, y);

```

- a. `x = 10; y = 10`
- b. `x = 10; y = 15`
- c. `x = 15; y = 10`
- d. `x = 15; y = 15`

*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** (2 marks)

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

Code	Output
<pre>#include &lt;iostream&gt; using namespace std; void one(int x, int&amp; y); void two(int&amp; s, int t); int main() {     int u = 1; int v = 2;     one(u, v);     cout &lt;&lt; u &lt;&lt; " " &lt;&lt; v &lt;&lt; endl;     two(u, v);     cout &lt;&lt; u &lt;&lt; " " &lt;&lt; v &lt;&lt; endl;     return 0;} </pre>	<pre>void one(int x, int&amp; y) {     int a;     a = x;     x = y;     y = a;}  void two(int&amp; s, int t) {     int b;     b = s - t;     s = t + b + 2;     t = 4 * b;} </pre>

*Unfamiliar problems solving:* This part aims to test the student understanding of the basic concepts of Standard (predefined) functions, User-Defined Functions, void functions and value and reference parameters.

**Question 3** (3 marks)

Write a program that defines the named constant `PI`, `const double PI = 3.1419`; which stores the value of  $\pi$ . The program should use `PI` and the standards (predefined) functions in `cmath` library to accomplish the following:

- a) Output the value of  $\sqrt{\pi}$ .
- b) Prompt the user to input the value of a double variable `r`, which stores the radius of a sphere. The program then outputs the following:
  - i. The value of  $4\pi r^2$ , which is the surface area of the sphere.
  - ii. The value of  $\left(\frac{4}{3}\right)\pi r^3$ , which is the volume of the sphere.

**Question 4** (5 marks)

Write and test the following `computeCircle` function that returns the `area "a"` and the `circumference "c"` of a circle with given radius `"r"`: (5 marks)

**Good Luck**