UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2012/2013

COURSE NAME	:	COMPUTER PROGRAMMING I
COURSE CODE	:	BWA 10103
PROGRAMME	:	1BWA
EXAMINATION DATE	:	JANUARY 2013
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS EXAMINATION PAPER CONSISTS OF **FIVE (5)** PAGES

PART A

Q1 Suppose that x, y and z are integer variables, and x = 10, y = 15, and z = 20. Determine if the following expressions are to **true** or **false.**

(a) !(x > 10) (1mark)

(b) x <= 5 | | y < 15 (1mark)

(c) (x != 5) && (y !=z) (1mark)

(d) x >= z | | (x + y >= z) (1mark)

(e) (x <= y – 2) && (y >=z) | | (z – 2 !=20) (1mark)

Q2 Assume that the following code is correctly inserted into a program:

```
int s = 0;

for (i = 0; i < 5; i++)
{
        s = 2 * s +i;
        cout << s << " " ;
}
cout << endl;
```

(a) Write the final value of s.
(b) If 5 is replaced with a 0 in the **for** loop control expression, determine the final value of s.

(5 marks)

Q3 Determine whether the following array declarations are valid. If a declaration is invalid, give your reason.

(a) **int** list75; (1mark)

(b) **int** size;
double list[size]; (1mark)

(c) **int** test[-10]; (1mark)

(d) **double** sales [40.5] (1mark)

(e) scores[50] **double;** (1mark)

Q4 Given the declaration:

```
int num = 6;
int *p = &num;
```

Determine which of the following statements increment(s) the value of num.

(a) p++; (1mark)
(b) (*p)++; (1.5 mark)
(c) num++; (1mark)
(d) (*num)++; (1.5 mark)

PART B

Q5 Identify the following items in the programming code shown below.

(a) Function prototype, function heading, function body, and function definition

(b) Function call statements, formal parameters, and actual parameters

(c) Value parameters and reference parameters

(d) Local variables and global variables.

```
#include <iostream>
using namespace std;

int one;

void hello(int&, double, char);

int main ( )
{
        int x;
        double y;
        char z;
        .
        .
        hello(x, y, z);
        .
        .
        hello(x,  y – 3.5, 'S');
        .
        .
}

void hello(int&  first, double second, char ch)
{
        int num;
        double y;
        int u ;
        .
        .
}
```

(15 marks)

Q6 The statements in the following program are in incorrect order. Rearrange the statements so that they prompt the user to input the shape type (rectangle, circle, or cylinder) and the appropriate dimension of the shape. The program then outputs the following information about the shape: For a rectangle, it outputs the area and the perimeter; for a circle, it outputs the area and the circumference; and for a cylinder, it outputs the volume and surface area. After rearranging the statements, you program should be properly indented.

```
using namespace std;

#include <iostream>

int main ( )
{
        string shape;
        double height;
        #include <string>
        cout << "Enter the shape type: (rectangle, circle, cylinder) ";
        cin >> shape;
        cout << endl;

        if (shape == "rectangle")
        {
                cout << "Area of the circle = " << PI * pow(radius, 2.0) << endl;
                cout << "Circumference of the circle: " << 2 * PI * pow(radius, 2.0) <<
                endl;
                cout << "Enter the height of the cylinder: ";
                cin>> height;
                cout << endl;
                cout << "Enter the width of the rectangle: ";
                cin >> width;
                cout << endl;
                cout << "Perimeter of the rectangle= " << 2 * (length + width) << endl;
        }
                        cout << "Surface area of the cylinder: " << 2 * radius * +2 * PI *
                        pow(radius, 2.0) << endl;
        }

        else if (shape == "circle")
        {
                cout << "Enter the radius of the circle: ";
                cin >> radius:
                cout << endl;
                cout << " Volume of the cylinder = " << PI * pow(radius, 2.0) * height
                << endl;
                double length;
        }
                return 0;

                else if  (shape == "cylinder")
        {
                double radius;
                cout << "Enter the length of the rectangle: ";
                cin >> length;
                cout << endl;
```

```
            #include <iomanip>

            cout << " Enter the radius of the base of the cylinder: ";
            cin >> radius;
            cout << endl;

            const double PI = 3.1416;
            cout << "Area of the rectangle = " << length * width << endl;

        else
            cout << "The program does not handle" << shape << endl;

        #include <cmath>
}
```

(15 marks)

PART C

Q7 There are 10 students in a class. Each student has taken five tests, and each test is worth 100 points. Write an algorithm to calculate the grade for each student as well as the class average. The grade is assigned as follows: If the average test score is greater than or equal to 90, the grade is A; if the average test score is greater than or equal to 80 and less than 90, the grade is B; if the average test score is greater than or equal to 70 and less than 80, the grade is C; if the average test score is greater than or equal to 60 and less than 70, the grade is D; otherwise, the grade is F. Note that the data consists of students' names and their test scores. Also, design a program for students' course grade by using calling function. (Hint: Use following three functions in this program: main,getScore , and printGrade)

(25 marks)

Q8 Write a program to determine the larger of the two items by using function template **larger**.

(25 marks)