



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1, Examination in Engineering - Part II, July 2016

Module No: EE1102 Module Name: Introduction to Programming

[1 hour and 30 minutes]

[Answer all questions. Questions 1, 2 and 3 carry 6.5, 6.5 and 7.0 marks respectively.]

Q1. a) Consider the following code.

```
if(x>y) x = y;
```

- i. What are variables found in this code?
- ii. What is the condition that the x will not be assigned the value of y?

[0.5 Marks]

b) The variable declared as `char chkbd`; contains the user input keyboard character. Write code fragments, by using the `if` control statement to display whether the variable `chkbd` contains

- i. a digit
- ii. a simple letter
- iii. a digit or a capital letter
- iv. none digit
- v. none digit or a none letter

Note that a character written within single quotation marks represents the ASCII code of the respective keyboard character. Eg. 'D' represents the ASCII code of letter D.

[3 Marks]

c) Following code displays numbers from 0 to 99, where `i` is an integer type variable.

```
for(i=0; i<100; ++i)
{
    Console.WriteLine("{0}, ", i);
}
```

Modify the code to

- i. display even numbers between 0 and 100.
- ii. calculate and display the sum of even numbers between 0 and 100.
- iii. sum of odd numbers between 0 and 1000, only if the number is between `x` and `y`, where `x` and `y` are user input numbers.

[3 Marks]

Q2. (a) Format of the **if–else if–else** control statement is given below.

```
if(Condition1)    { Statement1; }
else if(Condition2) { Statement2; }
..
else if(ConditionN) { StatementN; }
else              { StatementL; }
```

Show how to use **if–else if – else** to display the Grade for user input list of marks stored in the array `myMark` based on the marks ranges given in the table below.

Grade	Marks Range
A	85-100
A	75-84
A-	70-74
B+	65-69
B	60-64
B-	55-59
C+	50-54
C	45-49
C-	40-44
F	0-39

[2 Marks]

- (b)
- Show how to declare an array of name `myNum` and of type **double**, and also how to allocate 1000 elements to the array `myNum`.
 - Write code fragment that search and display numbers between 1000 and 1500 in the array `myNum`.
 - Write code fragment that would sort and display numbers of the array `myNum` in ascending order.

[4.5 Marks]

Q3. a) Consider the definition of the method given below.

```
static double fx(double m, double x, double c)
{ double y;
  y = m * x + c;
  return y;
}
```

- What is the type of the return parameter?
- what is the local variable of the method?
- Write a code fragment which *calls* the method `fx()` to display y values of $y = 300.51 \times x - 56.876$ for $x = -10, -9.5, -9.0, \dots, 9.5, 10$.
- Modify the method `fx` to return the y value of $y = a_1x^3 + a_2x^2 + a_3x + a_4$.

[4 Marks]

b) How does `for(){}` loop work? Explain by using an example and flowchart.

[1 Mark]

c) How does `while(){}` loop work? Explain by using an example and flowchart.

[1 Mark]

d) Show how to read a `double` type user input in a Console based application.

[1 Mark]