**COLLEGE OF BUSINESS AND ECONOMICS**
**SCHOOL OF CONSUMER INTELLIGENCE AND INFORMATION SYSTEMS**
**DEPARTMENT OF APPLIED INFORMATION SYSTEMS**
**NOVEMBER 2019 MAIN EXAMINATION**

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| MODULE: | Development Software 1B |
| CODE: | DSW01B1 |
| DATE: | 11 November 2019 (Main_Exam) |
| DURATION: | 2 hours |
| TOTAL MARKS: | 100 |

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| EXAMINER(S): | Ms Tebogo Makaba |
| MODERATOR(S): | Dr Wesley Doorsamy |
| NUMBER OF PAGES: | 06 including cover page |

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**INSTRUCTIONS:**

- This is a CLOSED book examination.
- **Answer all questions.**
- Electronic devices and smart watches are NOT allowed.
- You must write your student number on the answer booklet, write all your answer in it, and hand it in.
- Write neatly and legibly in the answer booklet.
- For all multiple-choice questions, indicate your answer clearly. Your answer must be a unique option. If two or more answers are indicated, you will be marked wrong for that question. Multiple choice that allow more than one answer to be selected are clearly indicated.
- The general University of Johannesburg policies, procedures, and rules pertaining to written assessments apply to this examination.

## Section A – General Questions [40 marks]

*[All questions in this section carries 2 mark each, unless stated otherwise]*

A1.

Visual Studio is a: _____
(a).     A Compiler
(b).     An Object-Oriented Programming Language
(c).     An Integrated Development Environment
(d).     A Visual Language for GUIs
(e).     All of the above

A2.

List two goals of OOP (Object oriented programming).

A3.

Describe Polymorphism as a principle of OOP.

A4.

In C#, the main method (i.e. Main ()) takes a parameter called args. What is the data type of this parameter?

A5.

Visual Studio was developed by_____?

A6.

List four reasons for using recursion.     **(4 marks)**

A7.

In C#, falling through a switch case is most often prevented by using the _____statement.

A8.

What is the major advantage of using a for loop instead of a while loop?

A9.

Let m be an integer variable. What do the following expressions mean?

  (a). m++

  (b). ++m

A10.

What is the C# method that produces a line of output on the screen?

A11.

What are the two things that every method in C# contains?

A12.

List the mandatory elements in the declaration of method.

A13.

What is a comment in the form /*this is a comment*/ called?

A14.

A method must include all of the following except_____.

 (a). A return type

 (b). Curly braces

 (c). A closing curly brace

 (d). An access modifier

A15.

List two controls that can allow the user to input in a GUI.

A16.

List two good qualities of an Algorithm.

A17.

A variable that can hold the two values true and false is of type _____.

A18.

Evaluate the truth value of the following expressions:  **(4 marks)**

 *(a). ((true) || (!true))  && ((!false && !true)  ||  !((!true || !false))*

 *(b). (!(3 > 7 - 13)   ||  (true))  && ! (!true)*

## Section B – Algorithm and Code Fragment [15 marks]

B1.
Create an **algorithm** for a Fibonacci problem then convert it to a **C# program**: **(11 marks)**

B2.

***Instructions:*** Determine the output of the following program fragments where possible. If buggy, specify the bug.

```csharp
bool a = true;
bool b = false;
Console.WriteLine(a && b);
Console.WriteLine(a || b);
Console.WriteLine(!a);
Console.WriteLine((5 > 7) ^ (a == b));
Console.ReadLine();
```

**(4 marks)**

## Section C –Console Programs [45 marks]

*[In writing your programs/code on paper you should start your code as if you are on Line 8, you do not have to write Line 1 to 7]*

C1.

Examine the following **C# program** and determine the output if possible. If buggy, specify the bug. **(5 marks)**

```
static void Main (string[] args)
{
    string star = "*";
    for (int i=0; i <= 3; i++)
     {
         Console.WriteLine(star);
         star += "*";
     }
     Console.ReadKey();
}
```

C2.

Create a **C# program** that determines the age of a person based on their year of birth and the current year. The program should then determine if the person qualifies to vote. **(8 marks)**

C3.

Create a **C# program** that accepts a phrase from the user and passes it to a method that returns the number of vowels in the phrase. The program should not consider such as (**e.g**. *w, r, q, m, h & g)* to be vowels. **(10 marks)**

C4.

Create a **C# program** that prompts a user to enter ten elements of a 1D array. Then the program should also prompt the user to delete an element in a desire position from the array.   **(12 marks)**

C5.

Create a **C# program** that will help a use to calculate and determine a *3 x 3* matrix. The program should prompt the user to enter the rows and col values of the matrix. **(10 marks)**

**End of paper. Good luck!**

*[This page is for rough work]*