

ZIMBABWE EZEKIEL GUTI UNIVERSITY



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FACULTY OF SCIENCE, TECHNOLOGY, AGRICULTURE AND FOOD  
SYSTEMS DEVELOPMENT

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DEPARTMENT OF INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE:	DIS113
COURSE TITLE:	INTRODUCTION TO PROGRAMMING USING C#
SPECIAL REQUIREMENTS:	NONE
LEVEL:	1.1
EXAM DURATION:	3 hours
DATE:	APRIL 2025

09 APR 2025

**Instructions**

- (i) Answer any five questions
- (ii) Number your answers accordingly.
- (iii) Start answering each question on a new page

### Question 1

- a) State any three characteristics that make C# an ideal programming language? [4 marks]
- b) Distinguish between passing parameters by value and by reference [6 marks]
- c) Explain with an example how a function that returns a value can be called by a Main program [10 marks]

### Question 2

- a) Comments are used to document programs. State and explain the two types of comments used in C# [4 marks]
- b) Write a C# program that calculates the sum of the numbers between 0 and 20 [8 marks]
- c) State any syntax rules used in C# [4 marks]
- d) State the rules that must be followed when naming variables in C# [4 marks]

### Question 3

- a) State any **four** characteristics of the C# programming language that make it a good choice for developing applications. [4 marks]
- b) State with examples the different types of comments that can be used in C# [4 marks]
- c) Explain the advantages of breaking down a large program into smaller subprograms [4 marks]
- d) Write a C# program that calculates the area of a circle after reading the radius through the keyboard. Use the value of the constant  $\pi = 3.14$  [8 marks]

### Question 4

- a) The **do...while** loop executes at least once regardless of the result of the condition. Explain why [4 marks]
- b) Let  $A = 9$ , and  $B = 13$ . Evaluate the following expression as executed by a C# compiler:

$$B(B+17)/(2*A-B) \quad [2 \text{ marks}]$$

- c) Consider the following code which sums the first 10 numbers including zero:

```
void static Main(int[] args){
    int i = 0, sum = 0;

    while( 0 < 10){
        sum = sum + i;
    }
    Console.WriteLine(sum);
}
```

Explain why the code will not give the correct sum of the first 10 numbers.

[6 marks]

- d) Compare between the **while** loop and the **do...while** loop as used in programming

[8 marks]

### Question 5

- a) Differentiate between boxing and unboxing in C# [6 marks]
- b) Discuss the characteristics of the array data structure as used in C# [6 marks]
- c) Explain what a constant is in C# [4 marks]
- d) State four characteristics of C# that make it a preferable language for developing modern applications [4 marks]

### Questions 6

- a) The scope of a variable describes the portion of a program where the variable is visible and can be used. Discuss the various type of variable scope that can be found in C# [6 marks]
- b) State with examples the different types of comments found in C# [4 marks]

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- c) What is the index of the Nth element in an array with N elements? [2 marks]
- d) Discuss the rules using parameters in defining and using parameters in programming [8 marks]

**END**