



ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF DIGITAL TECHNOLOGY

EXAMINATION PAPER

COURSE CODE : CDT 204
COURSE TITLE : Objet Oriented Programming
SPECIAL REQUIREMENTS : Combined Practical and Theory
DURATION : 3 Hours
LEVEL : 2.1
DATE : November 2019 **19 NOV 2019**

INSTRUCTIONS TO CANDIDATES:

1. Answer **ALL** Questions in Section A.
2. Answer any **TWO** Questions from Section B.
3. The marks allocation for each question is indicated in **BOLD** font.

Section A: Theory [60 marks]

Answer ALL the questions from this section.

Question 1

Which of the following statements about object-oriented properties of Java are true (each correct answer is worth of **2 marks**, for each wrong answer **1 mark** will be deducted — tread carefully and leave questions unanswered if not sure):

- i) One can define own primitive type, and own reference type in Java.
- ii) Given that o1 and o2 are two declared and initialised references to objects of the same class, the true value of the expression o1.equals(o2) always implies that o1 == o2 also evaluates to true.
- iii) An abstract class can extend a non-abstract (concrete) class.
- iv) When overriding a method whose return value has the type of the parent class, one can change the return type to match the subclass type.
- v) An interface can extend a class.
- vi) An abstract class can implement an interface.
- vii) The following code will compile without exceptions

```
int array Array[] = new Int[60];
```

[14 marks]

Question 2

```
abstract class Person {  
    String name;  
    double salary = 900.98;  
    public abstract void computePay();  
}
```

- i) Show how you will implement this abstract class together with the abstract method in Java. [6 marks]

Question 3

What is the difference between 'throw' and 'throws' in Java Exception Handling by using an example? [6 marks]

Question 4

Explain the following terms

- i) High level language
- ii) Assembly language
- iii) Machine language

[6 marks]

Question 5

Explain the life cycle of a thread.

[8 marks]

Question 6

Explain the basic features of the java programming language.

[8 marks]

Question 7

Explain the following terms

- i) Index Out Of Bounds Exception
- ii) Array Store Exception
- iii) Null Pointer Exception

[6 marks]

Question 8

What is the difference between a java constructor and a java method?

[6 marks]

Section B: Practical [40 marks]

Answer any TWO questions from this section.

Question 9

Write a program to calculate the factorial of a number using Java Frames. The Form should have three buttons, one to calculate the factorial, second button to clear the text and third button to exit the form. The factorial of the number should be shown using a Message dialog box.

[20 marks]

Question 10

Write a program to calculate the power of a given number entered by the user. Write the program using Java Frames with the necessary buttons and the message box.

[20 marks]

Question 11

Write a program to print the following pyramid of numbers.

```
0
0 1
0 1 2
0 1 2 3
0 1 2 3 4 5
```

[20 marks]