

**W1-2-60-1-6**

## JOMO KENYATTA UNIVERSITY

**OF**

**AGRICULTURE AND TECHNOLOGY**

# University Examinations 2014/2015

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**BIT 2206 : APPLICATION PROGRAMMING II**

**DATE: APRIL 2015 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND**

**ANY OTHER TWO QUESTIONS.**

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**QUESTION ONE (30 MARKS)**

(a) Explain four reasons for investing time in the design process of any software. [4 marks]

(b) Explain four purposes of software requirements specification (SRS).

[4 marks]

(c) In the context of a use case diagram, define the term “Actor”.

[2 marks]

(d) Define the term “class” in OOP and using an appropriate symbol, give an example of a class. [2 marks]

(e) In the context of debugging a program, explain the following terms:

1. Conditional breakpoint. [2 marks]
2. Locals window. [2 marks]
3. Warehouses window. [2 marks]

(f) Using an example, describe the term “method signature”. [4 marks]

(g) Explain the concept of data encapsulation. [2 marks]

(h) Your program has a property called studentsID. Using program code segment, explain:

1. How you can define the property. [2 marks]
2. How to restrict the property access so that it is Read Only.

[2 marks]

1. How to make the property Write Only. [2 marks]

**QUESTION TWO (20 MARKS)**

(a) In the context of OOP, define the term “inheritance”. [2 marks]

(b) Explain the terms Base class and Derived class. Use a program segment to illustrate how to create and use a base class.

[4 marks]

(c) Define the term “Abstract” class. Use a program to illustrate how to define one. [4 marks]

(d) Define the term “sealed class” and use program code to illustrate how to define one. [4 marks]

(e) Describe three ways you can define the scope of and the extent of the viability of a property or method. [6 marks]

**QUESTION THREE (20 MARKS)**

(a) Define the term “overriding of methods” of a base class. [2 marks]

(b) Explain, using program code, how you can override a method of a base class. [6 marks]

(c) Explain the term “method overloading”. [2 marks]

(d) Write program code that demonstrates the overloading of a derived method. [6 marks]

(e) Explain how you can ensure that a method will call its own method implementation even though the client is using an object instance of the derived class. [4 marks]

**QUESTION FOUR (20 MARKS)**

(a) Explain, using examples, three types of errors that can occur in a program code. [6 marks]

(b) Define the term “exception” in a program code and give one example.

[4 marks]

(c) Write program code to illustrate how to handle code that will end up causing an exception. [6 marks]

(d) Distinguish between “exception handling” and “error handling”.

[4 marks]

**QUESTION FIVE (20 MARKS)**

A medium sized organization needs a program that would manage a database of books and media items, and control how these items move between bookshelves and patrons. The software needs to have both patron and administrator-focused features. It would include various reports, including the printing of a receipt of checked-out items for the patron. And most of all, it needs to both print and read bar codes.

Explain the activities you will need to undertake to ensure the application program is delivered to the organization with the required functionalities.

[20 marks]