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**KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR**  
**FIRST YEAR, SECOND SEMESTER EXAMINATION**  
**FOR THE BACHELOR OF BUSINESS AND INFORMATION TECHNOLOGY**  
**KBI 2109 FUNDAMENTALS OF PROGRAMMING**

Date: 14<sup>TH</sup> AUGUST 2024  
Time: 11:30AM – 1:30PM

**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

- a) Using relevant examples Describe the following terms as used on object-oriented programming paradigm
- i) Class (2 Marks)
  - ii) Object (2 Marks)
  - iii) Method (2 Marks)
  - iv) Constructor (2 Marks)
- b) Describe four applicable areas of python programming language (4 Marks)
- c) With the help of python snippet code, explain two reasons of using comments in python programming (3 Marks)
- d) Elaborate four rules of declaring and naming variables in python programming (4 Marks)
- e) What is Exception handling, and write a python code that can gracefully handle zero division error (6 Marks)
- f) What is the recursion function, and write a python program of your choice implementing recursion function (5 Marks)

**QUESTION TWO (20 MARKS)**

Upon completing your degree, you have been hired as a junior python developer, to develop student management system. The system will implement various object-oriented concepts

**Class:** Students

**Objects:** student 1, student 2, student 3

**Required:** Using the above provided details

- a) Write a python code implementing class with relevant attributes, constructors and methods (8 Marks)
- b) Write a python code implementing creation of the three objects and calling all the necessary methods (7 Marks)
- c) Describe the importance of constructors during object oriented programming (5 Marks)

**QUESTION THREE (20 MARKS)**

- a) Explain four reasons why a programmer would implement encapsulation technique in object oriented programming (5 Marks)

- b) You have been hired by safaricom as a senior python developer, write a python program code to implement encapsulation in Mpesa transactions like deposit, withdraw and checking balance (10 Marks)
- c) Differentiate between tuple and list in python and give two advantages of each (5 Marks)

#### **QUESTION FOUR (20 MARKS)**

- a) Describe the importance of including inheritance in object oriented programming (5 Marks)
- b) Write a python program of your choice implementing inheritance object oriented concept (10 Marks)
- c) Write python programming language to perform the following string methods
  - i) Change case to upper case (2 Marks)
  - ii) Change case to title case (2 Marks)
  - iii) Check the string of a string (1 Mark)

#### **QUESTION FIVE (20 MARKS)**

You have been recruited by ABC software development Firm, and hired as a python developer.

- a) Describe two python frameworks that can be used in web development (5 Marks)
- b) Describe two python frameworks that can be used in graphical user interface (GUI) (5 Marks)
- c) Describe two python libraries that can be used to perform data manipulation and analysis and matrixes (5 Marks)
- d) Describe the reasons why you would consider python over other object oriented programming languages (5 Marks)