

WOMEN'S UNIVERSITY IN AFRICA



Addressing gender disparity and fostering equity in University Education

FACULTY OF MANAGEMENT AND ENTREPRENEURIAL SCIENCES

BSc HONOURS DEGREE IN INFORMATION SYSTEMS

MAIN PAPER

IS221: VISUAL C++

INTAKE 24: SECOND YEAR SECOND SEMESTER

TIME: 2 HOURS MORNING

INSTRUCTIONS TO CANDIDATES

Answer any **four** questions.

Question 1

- a) What are friend functions [3]
- b) State any 4 characteristics of friend functions [4]
- c) Explain any five advantages of Object Oriented Programming [15]
- d) Write a C++ code illustrating how to declare a constructor [3]

Question 2

- a) Write a program to create a class called **Circle** with member variable **radius** and method **area()** that calculates area of a circle given by **pi*radius*radius**. **NB** Make a relevant declaration of constant **pi**. The program must allow the user to enter the value of radius and display the area. [15]
- b) Using an example, illustrate the scope of variables and functions in classes. [10]

Question 3

- a) Write a program to calculate the volume of a cone given by

$$V = \frac{1}{3} \Pi r^2 h$$

Where radius and height are captured from user. [13]

- b) Determine the output of the following Java statements given that: int a=10; int b=10;
 - i. cout<<(++a);
 - ii. cout<<(b--);
 - iii. cout<<(--a);
 - iv. cout<<(a++ + ++a);
 - v. cout<<(b++ + b++);
 - vi. cout<<"a+b = "<<(a+b); [12]

Question 4

- a) Define the following Object Oriented concepts
 - i. Class; [3]
 - ii. Object; [3]
 - iii. Data encapsulation; [3]
 - iv. Function Overloading; [3]
 - v. Inheritance; and [3]
 - vi. Dynamic binding [2]
- b) Explain any four advantages of object oriented programming [8]

Question 5

- a) Write a program that prompts the user for integers. When the user enters a negative integer, the program stops reading the numbers and writes the sum, average and product of all non-negative integers entered. You need to draw the visual architecture first. [15]
- b) Write a program to capture 8 elements in an array and determine the minimum and maximum member in an array using functions Min () and Max () [10]

Question 6

- a) Using both sample code and diagrams, explain the different forms of inheritance. [15]
- b) Write a program code which throws an exception of type char* and another of type int. Write a try ---- catch block which can catch both the exception. [10]

END