



Kasarani Campus
Off Thika Road
Tel. 2042692 / 3
P. O. Box 49274, 00100
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN BUSINESS AND INFORMATION
TECHNOLOGY

KBI 2109 – FUNDAMENTALS OF PROGRAMMING

Date: 7th December, 2022
Time: 8:30am – 10:30am

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) With the use of an example, differentiate between an identifier and keywords [3 Marks]
- b) What type of data would you use to do the following? Give a reason for your answer for each case
- i) Count the number of times that a baby pushed herself to the left [using the assistive robot]? [2 Marks]
 - ii) Measure the forward progress of the baby during a fixed period of time (in meters)? [2 Marks]
 - iii) Store the name of the baby? [2 Marks]
- c) Given the following block of code. Which line contains an error? Explain your answer
- i)

```
1 int aa = 5;
2 int bc = 99;
3 int c1 = 32;
4 int d_ = 7;
```

 [2 Marks]
 - ii)

```
1 int a = 5;
2 double b = 99;
3 int c@ = 7;
4 boolean d = false;
```

 [2 Marks]
 - iii)

```
1 in t m = 5;
double n = 9 9;
3 double o = m;
4 int p = n;
```

 [2 Marks]
- d) What result is printed by this block of code? Give a reason for your answer [5 Marks]

```

int n = 21;
if (n > 16)
{
    if (n > 32)
        System.out.println(n + 5);
    else
        System.out.println(n / 3);
}
else
{
    if (n < -10)
        System.out.println(a * 2);
    else
        System.out.println(a - 3);
}

```

- e) Write a C program that takes hours and minutes as input, and calculates the total number of minutes. [10 Marks]

QUESTION TWO (20 MARKS)

- a) What result is printed by this block of code? [5 Marks]

```

char c = 'a';
int count = 0;

while (c < 'g')
{
    ++c;
    ++count;
}
System.out.println("The result is: " + count);

```

- b) Write a pseudo code and flowchart to accept a student's marks in Physics, Chemistry, and Biology. The total of these marks as well as the average should be displayed [5 Marks]
- c) Write a code fragment that prints the maximum value contained in three variables (a, b and c). You may assume that these variables, all doubles, are already declared and assigned to some set of values and that all of the values are different. Do not use the && or the || operators. [10 Marks]

QUESTION THREE (20 MARKS)

- a) With the use of examples, explain how the following operators work in the C programming language [6 Marks]
- Arithmetic
 - Logical
 - Relational
- b) What will be the output of the following program? Explain your answer [5 Marks]
- ```

#include <stdio.h>
void main()
{
 int x=(20 || 40) && (10);
 printf("x= %d",x);
}

```
- c) Length and breadth of a rectangle are 5 and 7 respectively. Write a program to calculate the area and perimeter of the rectangle. [9 Marks]

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

- a) Write a C program to accept two integers and check whether they are equal or not [5 Marks]
- b) Write a program in C to display the first 10 natural numbers. *The expected Output is:*  
1 2 3 4 5 6 7 8 9 10 [5 Marks]
- c) Write a program in C to check a given number is even or odd using the function [10 Marks]

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

- a) Describe three classification of the programming languages [3 Marks]
- b) Describe four types of storage specifiers used in C language. [4 Marks]
- c) Classify the following errors:
  - i) Misspelling keywords
  - ii) Dividing a number zero
  - iii) Using an undeclared variable [3Marks]
- d) Design a program using pseudo code to calculate and display the gross pay of fifty employees given that gross = basic pay + allowances. [4 Marks]
- e) Implement the design in a) using C. The program should prompt the user to enter basic pay and allowance, then calculate and display gross pay for all the fifty employees. [6 Marks]