

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE
IN APPLIED COMPUTER SCIENCE**

ACSC 121: PROGRAMMING PARADIGMS

STREAMS: BSC. APPLIED COMP SCI Y1S1

TIME: 2 HOURS

DAY/DATE: TUESDAY 17/12/2019

2.30 P.M – 4.30 P.M

INSTRUCTIONS:

Answer question 1 and any other two

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION**QUESTION ONE (30 MARKS)**

- a) With justification, explain which programs run faster between **Compiled** and **Interpreted Programs**. **[4 Marks]**
- b) Using a diagram, simply describe the process of compilation. Give any two examples of compiled programming languages. **[4 Marks]**
- c) John, an established web designer is in the process of designing a web portal for farmers. The portal **MUST** include a login function for the users.
 - i) What are the activities he must do at this stage? **[3 Marks]**
 - ii) Write an algorithm for the login function. **[3 Marks]**
 - iii) In a language of your choice, convert the algorithm in ii) above into an actual program. **[4 Marks]**
- d) Write a function that converts a whole numeric value entered by the user into the equivalent no of Meters (M) and Centimeters (Cm) and outputs the same. **[6 Marks]**
- e) Outline any **FOUR** characteristics of a quality algorithm. **[2 Marks]**
- f) Describe the purpose of any **TWO** pre-processor directives. **[4 Marks]**

SECTION B: ATTEMPT ANY TWO QUESTIONS (40 MARKS)**QUESTION TWO (20 MARKS)**

- a) A company requires a program that accepts the first five random prime numbers and outputs them as the winning combination.
 - i) Draw a flowchart that implements this logic. **[4 Marks]**
 - ii) Using a dimension array, write a program that solves the problem. **[6 Marks]**
- b) Differentiate between Primary and Derived data types as used in C. **[4 Marks]**
- c) Define the term **SYMBOLIC CONSTANTS** in C and using appropriate code, demonstrate how they are used. **[6 Marks]**

QUESTION THREE (20 MARKS)

- a) Distinguish between Structured programming paradigm from the Object-Oriented paradigm. **[4 Marks]**
- b) Write a program that uses a structure to capture the Name, Reg_No, Gender and Year_of_Birth of a student and displays the same on the screen. **[6 Marks]**
- c) Describe the logic programming paradigm clearly define the basic terms used in the writing of its code. **[6 Marks]**
- d) Distinguish between an algorithm and a pseudocode and demonstrate the same using appropriate examples. **[4 Marks]**

QUESTION FOUR (20 MARKS)

- a) Using any **TWO** different data types, show how you can declare variables in the C programming language and the format specifiers associated with each. **[4 Marks]**
- b) Outline any **FOUR** basic rules in naming identifiers. **[4 Marks]**
- c) A school needs a simple program that captures the Name and Reg_No of 5 students and displays the same together with their respective scores for Maths, Eng and Kisw.
 - i) Explain any **TWO** different control structures you would use for the task described above. **[4 Marks]**
 - ii) Write a program that solves the problem. **[6 Marks]**
- d) Define the term **PROGRAM**. **[2 Marks]**

QUESTION FIVE (20 MARKS)

- a) Define the term **SOFTWARE PROCESS** giving any **TWO** examples of common software processes used in software development. **[4 Marks]**
- b) Consider the C code snippet below to answer the questions that follow:

```
int main()
{
    Struct County C47;
    C47.Code = Nairobi;
    strcpy(C47.Name, "047");
    printf("Name of county: %c\n",C47.Name);
    printf("Code of county: %f\n",C47.Code)
    return 0;
}
```

- i) Explain what the code does. **[3 Marks]**
 - ii) Identify at least **THREE** errors in the code and write the respective correct code for each error identified. **[3 Marks]**
 - iii) Rewrite the entire code in complete including the relevant header files and declarations required for the program to run. **[6 Marks]**
 - e) Define what an integrated development Environment (IDE) is giving popular IDE's used for C programs. **[4 Marks]**
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