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MAIN EXAMINATION

JANUARY-APRIL 2025

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

CMT 110: PROGRAMMING METHODOLOGY

DATE: APRIL 2025	**Duration: 2 Hours**
INSTRUCTIONS: Answer Question ONE and any other TWO Questions	

Q1.

a) Define the following terms as used programming methodology:
   i. Functional programming **(2 Marks)**
   ii. Command. **(1 Mark)**
   iii. Cloud. **(1 Mark)**
   iv. Linter. **(2 Marks)**

b) Enumerate any four habits which are considered good for programming. **(2 Marks)**

c) Explain any three reasons as to why we need programming methodologies in software development industry. **(6 Marks)**

d) Differentiate between Syntax error and Run Time errors. **(4 Marks)**

e) Distinguish between a compiler and interpreter. **(4 Marks)**

f) Using an Example illustrate the nested loop programming concept. **(2 Marks)**

g) Differentiate the following as used in computer programming.
   i). Reserved word and identifier **(2 Marks)**
   ii). Data type and operator **(2 Marks)**
   iii). printf and scanf (**2 Marks)**

Q2.

a) Write a program in C language using FOR loop that allows the user to input a number and produce a multiplication table. **(10 Marks)**

b) Explain the program development Cycle. **(10 Marks)**

Q3.

a) A sales person for a mobile handset selling company, earns a basic salary of ksh 20,000 a commission of 2% for all total sales for the month and a bonus of 300 for every handset sold during the month. If each handset is sold at ksh 2,000, write a C program to calculate the gross salary for a worker at the end of the month when the number of handsets sold is keyed in by the seller **(10 Marks)**

b) Using a function write a C program to input two numbers as argument and returns the value of their sum **(6 Marks)**

c) Suppose a, b and c are integer variables that have been assigned the values a=2, b=4 and c=-6. Determine the value of each of the following expressions

i). 2*b+3*(a-c) **(2 Marks)**

ii). (a*c)% b **(2 Marks)**

Q4.

a) Explain the three types of loops used in C programming language. **(6 Marks)**

b) With the aid of a flowchart, write a program in C language that allows a user to input any integer number then determine if the number is an even or odd. **(10 Marks)**

c) Identify four benefits of flow charts in computer programming **(4 Marks)**

Q5.

a) Write short notes on the following levels in programming.

i). Low-level programming. **(4 Marks)**

ii). Machine-level programming. **(4 Marks)**

b) Analyze the programs 1 and 2 below and write the output **(12 Marks)**

Program1

```
#include <stdio.h>
Void main ( ) {
int i=1;
 for (k=1; k<10; k++)
{
i*=k;
printf ("%d", k," \t"); printf ("%d", i, "\n");
}
printf ("%d", i);
}
```

Program2

```
#include<stdio.h>
void main(){
   int a=5,b=10;
   swap(&a,&b);
   printf("%d     %d",a,b);
}
void swap(int *a,int *b)
{
   int  *temp;
   *temp =*a;
   *a=*b;
  *b=*temp;
}
```

END