

PAN AFRICA CHRISTIAN UNIVERSITY

CERTIFICATE IN INFORMATION AND COMMUNICATION TECHNOLOGY

END OF SEMESTER EXAMINATION

DEPARTMENT: COMPUTING AND INFORMATION TECHNOLOGY
COURSE CODE: CICT0113
COURSE TITLE: INTRODUCTION TO PROGRAMMING CONCEPTS
CAMPUS: ROYSAMBU
EXAM DATE: TEUSDAY 2ND APRIL ,2025
TIME: 2:00PM -5:00PM

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Three questions in Section **B**.
- Write only your **student number** on the answer booklet provided.

SECTION A

(Answer ALL questions in this section)

Question 1:

- a) The printf() and scanf() functions are defined in the standard input output library. State the roles of the printf() and scanf() functions. **(2 marks)**
- b) At the weighing office in a local coffee factory, farmers bring their produce in bags. Having been newly hired as a programmer, identify the appropriate datatypes you would use to represent each of the following: **(2 marks)**
- i. bags of maize each farmer has brings.
 - ii. total weight of coffee each farmer brings.
- c) Explain the following parts of a C program structure:
- i. #include; **(2 marks)**
 - ii. main(); **(2 marks)**
 - iii. return 0; **(2 marks)**

SECTION B

(Answer any THREE (3) questions in this section)

Question 2:

- a) 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)**

- b)** The following excerpt of a C program was written by a student during a programming class. Determine the output when the code is executed.
(2 marks)

```
include <stdio.h>

void main() {
    int i, j;
    float mean;
    printf("Input the values of i and j:");
    scanf("%d %d", &i, &j);
    mean = (i+j)/2;
    printf("The mean is %0.2f", mean);
    return 0;
}
```

- c)** All library functions are included in different header files saved with a .h extension. State the functions of the following header files. **(4 marks)**

- i. stdio.h
- ii. string.h
- iii. math.h
- iv. time.h

Question 3:

Mark encounters several syntax errors when a program. Below are some of the statements he wrote:.

- i. Printf(Welcome);
- ii. scanf("d", x);
- iii. printf("Welcome")
- iv. define PI 3.14159
- v. Void my Function()

- a) Identify and correct the errors in each of the above statements. **(5 marks)**
- b) Provide five best practices he should follow to write error-free and well-structured C programs. **(5 marks)**

Question 4:

- a) Providing an example, explain the functions of the following preprocessor directives. **(4 marks)**

- i. `#include`
- ii. `#define`

- b) Explain the output of the following code. **(2 marks)**

```
#include <stdio.h>

int main() {

    int x = 21;

    for (; x <= 25; x = x + 1) {

        printf("%d\n", x);

    }

    return 0;

}
```

- c) State the function of each of the following escape characters as used in C programming language. **(4 marks)**

- i. `\a`
- ii. `\t`
- iii. `\n`

iv. \\

Question 5:

a) The following are two statements in C program

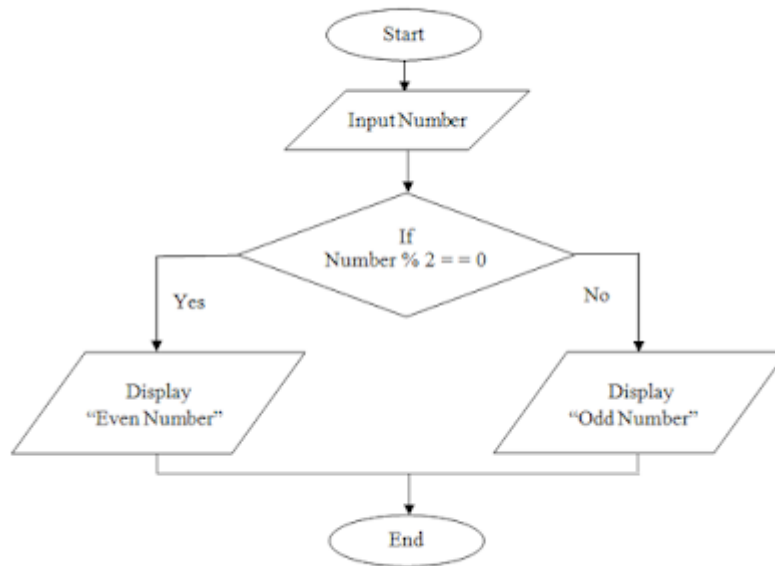
`a=5;`

`a==5;`

- i. Explain the difference between these two statements and their purpose in a C program. **(2 marks)**
 - ii. Discuss two common errors encountered when using assignment (=) and comparison (==) operators. **(4 marks)**
- b) Kevin is writing his first program but is unsure about the rules for naming variables and identifiers. Explain four key rules he should follow when naming identifiers in programming. **(4 marks)**

Question 6:

The following flowchart is designed to determine whether a number is odd or even.



- i. Explain the meaning of the various symbols used in the flowchart. **(5 marks)**
- ii. Convert the flowchart into a C program that performs the same task. **(5 marks)**

EOF