

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2022/2023 ACADEMIC YEAR

FIRST YEAR EXAMINATION FOR THE DEGREES OF
BACHELOR OF SCIENCE (COMPUTER
SCIENCE)/BACHELOR OF SCIENCE (ICT)

COMP 113: INTRODUCTION TO PROGRAMMING

STREAM: R

TIME: 2 HRS

DAY: WED [8.30AM – 10.30AM]

DATE: 14/12/2022

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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INSTRUCTIONS

- Answer **ALL** questions in section **A** and any **TWO** questions in section **B**
- All questions in section **B** carry equal marks

SECTION A (30 Marks)**QUESTION ONE (30 marks)**

- a) Define the relationship between variables and data types. **(2 Marks)**
- b) Explain when one would use the do... while loop and not the while loop. **(2 Marks)**
- c) Define the term structure members. **(2 Marks)**
- d) Write down the snippet of code that would create a structure called employee. empname, empid, emptitle, and empsalary are the members of the structure and books is the structure variable. **(5 Marks)**
- e) Distinguish between each of the following pairs of terms:
- Operator and operand **(2 Marks)**
 - Source code and object code **(4 Marks)**
- f) Define the term function and illustrate the syntax used to declare a function. **(4 marks)**
- g) Write a C program to illustrate the use of 3 library string functions. (Include the output to your program after writing the code.) **(6 Marks)**
- h) What is the output of the following program? **(3 Marks)**

```
#include<stdio.h>

main()
{
    int pica = 0, delta = 0;
    While(pica <= 20)
    {
        if(pica % 5 == 0)
        {
            delta += pica;
            printf("\n %d ", delta);
        }
    }
}
```



```

        delta++;
    }
}

```

SECTION B: Each question is worth 20 Marks. Answer any TWO questions in this section

QUESTION TWO (20 marks)

- (a) Write a C program using the switch statement that will ask the user to enter a value between 1 and 7 and will print out the day of the week based on the number chosen i.e. as in 1 for Sunday to 7 for Saturday. **(7 Marks)**
- (b) Briefly describe the difference between each of the following pairs of operators as used in C language: **(8 Marks)**
- /= and +=
 - = and !=
 - && and ||
- (c) You have been asked to advice interns at Toyota Kenya the phases of a Software Development Life Cycle. Describe what happens during problem recognition and problem definition stages of SDLC. **(5 Marks)**

QUESTION THREE (20 marks)

- (a) Draw a flowchart to illustrate the following program: **(5 Marks)**

```

#include<stdio.h>

void main()

{

    int mark;

    printf("\n Enter the mark: \n");

    scanf("%d", &mark);

    if(mark < 40)

        printf("\n You have failed! \n");

```

```
else
```

```
printf("\n You have passed!\n");
```

```
}
```

- a) C Language statements, labels, arrays e.t.c. are separated by special characters known as delimiters. Enumerate the use of the following delimiters in C language construct.

(4 Marks)

(i) #

(ii) []

(iii) { }

(iv) ;

- b) What is the difference between passing arguments to a function by value and passing by reference?

(4 Marks)

- c) Write a C program that requests a user to key in the bonga points that they have accumulated and the displays the reward they have qualified for (use the table below as a guide)

(7 Marks)

Bonga points	Reward
0 -199	null
200 - 499	8 free sms's
500 - 999	5 free minutes
1000 - 4999	Nokia 1100
5000 and above	Safaricom modem

QUESTION FOUR (20 marks)

- a) Rewrite the following program using the switch construct.

(6 Marks)

```
#include<stdio.h>
```

```
main()
```

```
{
```

```
char grade;
```

```

printf("Enter the Grade:");

scanf("%c", &grade);

if(grade == 'A')

    printf("Excellent !\n");

else if(grade == 'B')

    printf("Good !\n");

else if(grade == 'C')

    printf("Fair !\n");

else if(grade == 'D')

    printf("Poor !\n");

else if(grade == 'E')

    printf("Very Poor !\n");

else

    printf("Wrong Entry !, Enter a grade between A – E \n");

}

```

b) Distinguish between the indirection operator (*) and the address operators (&) as used with pointers. **(2 Marks)**

c) Discuss about declaring, initializing and accessing a one-dimensional array in C. Use examples to illustrate each concept. **(8 Marks)**

d) Write the output of the following program. **(4 Marks)**

```

#include <stdio.h>
int main( )
{
    int x;
    for(x=10; x >=3; x--)
        printf("%d ", x);
}

```

```
return 0;  
}
```

QUESTION FIVE (20 marks)

- a) Give the meaning of the following components of a C program. **(8 Marks)**
- i) Preprocessor directive
 - ii) Declaration
 - iii) Comment
 - iv) Header File
- b) Write C programs that will accomplish the following
- i) Print from 10 to 60 using the while loop **(5 Marks)**
 - ii) add numbers 5 through 10 (inclusive) using the for loop **(7 Marks)**

