



Republic of Rwanda
City of Kigali



GASABO DISTRICT

DISTRICT COMPREHENSIVE ASSESSMENT

SECTOR: ICT

TRADE: SOD

RTQF: LEVEL 4

MODULE: APPLY PROGRAMMING FUNDAMENTALS

ACADEMIC YEAR: 2022-2023

INSTRUCTIONS:

- This assessment has maximum of 100 marks
 - This assessment has three sections: A, B and C
 - Section A: attempt all the questions (55 marks)
 - Section B: attempt any three section to answer (30 marks)
 - Section C: choose only one question (15points)
 - Duration: 3hours
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MARKING GUIDE TERM 2, 2023.

SECTION A: ANSWER ALL THE QUESTIONS /55MARKS

1. Is an artificial language used to write a sequence of instructions that can be run by a computer. **(5marks)**
2. **(5marks)**
 - a) Variable: is a name given to the allocation into memory and store value.
 - b) Constant: is an expression having a fixed-value.
 - c) An identifier is a name given by a programmer to represent a variable in computer memory. It is also called a variable name.
 - d) Array: is a variable that stores a set or collection of the same data-type.
 - e) Function: is a self-contained block of statements that perform a coherent task.
3. A compiler is a program which translates source codes into machine codes at once. Whereas an interpreter is a program which translates sources codes into machine codes statement by statement as each instruction is executed. **(5marks)**
4. **(5marks)**

\n	Newline
\t	Horizontal tabulation
5. **(5marks)**

Relational operator	Meaning
>	Greater than
<	Less than
>=	Greater or equal to
= =	Equal to
!=	Not equal to
6. These functions input data from the standard input stream and output data to the standard output stream, respectively. **(5marks)**

7. (5marks)

```
#include <stdio.h>

main()
{
    int a,b,sum;

    printf("enter the first number\n");
    scanf("%d",&a);
    printf("enter the second number\n");
    scanf("%d",&b);
    sum=a+b;
    printf("the sum is %d\n",sum);
}
```

8. A program to perform sum , product and average of 4 integer numbers. (5marks)

```
#include<stdio.h>
main()
{
    int a,b,c,d,sum,pro,av;
    printf("give four integer numbers\n");
    scanf("%d %d %d %d",&a,&b,&c,&d);
    sum=a+b+c+d;
    pro=a*b*c*d;
    av=sum/4;
    printf("the sum is %d",sum);
    printf("the product is %d",pro);
    printf("the average is %d",av);
}
```

9. Five rules to name an identifier (5marks)

- a) Only digits, alphabets and underscore symbol are allowed
- b) A number cannot start a variable name
- c) A keyword cannot be used to name a variable name
- d) No blank space should be in two names

e) Special characters are not allowed while naming a variable name

10. (5marks)

A	B	A B	A&&B
True	True	True	True
True	False	True	false
False	True	True	false
False	False	False	false

11. #include <stdio.h> (5marks)

```
main( )  
{  
printf(" my school name\n");  
}
```

SECTION B:CHOOSE ANY THREE QUESTIONS /30MARKS

12.

a) In C, write an application to display the table bellow (5marks)

```
#include <stdio.h>  
  
main( ){  
int i;  
for(i=1;i<11;i++){  
printf("%dx%d =%d \n",i,i,i*i);  
}
```

b) . #include <stdio.h> (5marks)

```
main( ){  
int num;  
printf("Enter any number:\n");  
scanf("%d",&num);  
if(num>0)  
printf("%d is positive \n",num); }
```

```

else if(num == 0){
printf("%d is neutral element \n",num);
}
else
printf("%d the number is negative \n",num);
}

```

13. **(5marks)** a) #include <stdio.h>

```

int main( )
{
int a;
printf("enter a number\n");
scanf("%d",&a);
if(a%2==0)
printf("the number %d is even\n",a);
else
printf("the number %d is Odd\n",a);
}

```

b) Write a C program code to display ten odd numbers from 1 (use for loop or while loop even do-while loop). **(5marks)**

```

#include <stdio.h>

main( ){
int i;
for(i=1;i<21;i+=2){
printf("%d\n",i);
}
}

```

14. **(5marks)** a) The conditional operator evaluates an expression returning a value if that expression is true and a different one if the expression is evaluated as false.

b) (5marks)

```
#include<stdio.h>
main( )
{
int age;
printf("give age\n");
scanf("%d",&age);
printf((age>=18)? "adult": "young");
}
```

15. (5marks)

```
a) #include <stdio.h>
int main( )
{
floatlength,width,area;
printf("enter length\n");
scanf("%f",&length);
printf("enter width\n");
scanf("%f",&width);
area=length*width;
printf("the area=%f\n",area);
return 0;
}
```

b) (5marks)

Output

```
1  1  1  1  1
2  2  2  2
3  3  3
4  4
5
```

SECTION C: CHOOSE ONLY ONE QUESTION /15Marks

16.

```
#include <stdio.h>
main( )
{
intqty,dis=0;
floatrate,tot;
printf( "enter the quantity and rate");
scanf("%d",&qty);
scanf("%d",rate);
if (qty> 1000)
{
dis = 10;
```

```

tot = (qty * rate) -(qty *rate * dis/100);
printf( "total expenses:%d" ,tot);
}
}

```

```

17.//Fibonacci series
#include <stdio.h>
main( )
{
int n, first=0,second=1,next,i;
printf("\nEnter a number of terms: \n");
scanf("%d", &n);
printf("\nFirst %d terms of Fibonacci series are: \n",n);
for(i=0;i<n;i++){
if(i<=1){
next=i;
else{
next=first+second;
second=next;
}
printf(" %d", next);
}
}
}

```

18. Write a C program code to find the factorial of a number entered by the user through the keyboard.

HINT: $n! = n * (n-1) * (n-2) * (n-3) * \dots * (n-(n-1))$ or $n! = 1 * 2 * 3 * \dots * n$

$$5! = 5 * (5-1) * (5-2) * (5-3) * (5-4)$$

$$5! = 5 * 4 * 3 * 2 * 1$$

$$5! = 1 * 2 * 3 * 4 * 5$$

$$5! = 120$$

$$0! = 1 \text{ and}$$

$$1! = 1$$

```

#include<stdio.h>

```

```

int main( )

```

```
{  
int i,fact=1,number;  
printf("Enter a number: ");  
scanf("%d",&number);  
for( i=1;i<=number ; i++){  
fact=fact*i;  
}  
printf("Factorial of %d is: %d",number,fact);  
return 0;  
}
```