

ADVANCED LEVEL TEST
SUBJECT: COMPUTER SCIENCE

COMBINATIONS:

- **MATHS-COMPUTER SCIENCE-ECONOMICS: MCE**
- **MATHS-PHYSICS-COMPUTER SCIENCE: MPC**

DURATION: 3 HOURS

INSTRUCTIONS:

1. Do not open this question paper until you are told to do so.
2. This paper consists of **three** sections: **A, B** and **C**
 - Section A:** attempt **all** questions **(55marks)**
 - Section B:** attempt **only three** questions **(30marks)**
 - Section C:** attempt **any one** question **(15marks)**
3. Use only blue or black pens

SECTION A: Attempt all questions in this section. (55 marks)

1. Give three examples of an audio port that connect audio devices to the computer.
/3 marks

2. Complete the following result of a relational operation which is Boolean value that can only be **true** or **false**, according to its Boolean result.

/5marks

If a=2, b=3 and c=6

- i. (a==5)
 - ii. (a*b>=c)
 - iii. (b+4>a*c)
 - iv. ((b=2)==a)
 - v. !(c>b)
3. Write algorithm which uses **do...while** loop and displays numbers from 0 up to 6.
/4marks

4. What is a data structure? With an example, show how the data structures are declared. **/5marks**

5. What are the disadvantages of database management system?
/4marks

6. What is a computer programming?
/3marks

7. What is a flowchart?
/2marks

8. a. List the families of computer?
/2marks

- b. What are the outputs of the following program?
/4marks

```
#include<iostream.h>
int subtraction(int a, int b)
{
    int r;
    r=a-b;
    return (r);
}
int main ()
{
    int x=100, z=33, y, m;
    y=subtraction (900,150);
    cout<<"The first result is :"<<y<<endl;
    cout<<"The second result is :"<<subtraction(x,z)<<endl;
    m=5+ subtraction (x,z);
    cout<<"The third result is :"<<m<<endl;
    cout<<"This is the end of function :"<<endl;
```

```
return 0;
}
```

9. Convert the following decimal number to binary system.

/3marks

101.625

10. Write a C++ program to display the following result:

/6marks

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

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

11. Write a C++ program to calculate the square root of numbers from 1 to 10.

/5marks

12. Distinguish the private members from protected members.

/4marks

13. Write C program to accept a string and find out total numbers of characters.

/5marks

SECTION B: Attempts any three questions(30marks)

14. Rewrite the following fragment so that it uses do...while loop to accomplish the same task. **/10marks**

```
int n;
cout<<"Enter a non negative integer:";
cin>>n;
While(n<0)
{
cout<<"The integer you entered is negative"<<endl;
}
```

15. a. Define the following terms and give an example on each one:

/6marks

- Entity
- Attribute
- Relationship

b. What is the difference between database normalization and the database de-normalization? **/4marks**

- 16.** Distinguish the features of fourth computer generation from the features of first computer generation. **/10marks**
- 17.** Write a pseudocode of an algorithm which reads two sides of rectangle and calculate its area. **/10marks**
- 18.** Define the following terms: **/10marks**
- Branching statement
 - Looping statements
 - if statement
 - if else statement

SECTION C: Attempt any one question. (15 marks)

- 19.** a) Create a table of your choice with at least four different attributes using SQL commands. **/5marks**

b) Given an **Employee** table below:

Name	Phone	Address	Salary	Evaluation
Habineza	2251945	Nyarugenge	185000	0.75
Umulisa	0738709008	Huye	123000	0.90
Gatesi	0729865231	Gatsibo	230000	0.80
Hirwa	4990	Nyamata	197000	0.85

Write SQL statements for:
/10marks

- For inserting the following record:
'Mugisha', 2345, 'Nyanza', 189000, '0.78'
 - Updating table by giving a salary increase of 20% to those employees whose evaluation is above or equal to 0.80
 - Destroying the table Employee
 - List the name, address and salary of employee whose evaluation are less than 0.80 or greater than 0.85
- 20.** a. Using suitable examples, explain how you can give comments in C program. **/6marks**
- b. What are the output of the following program? **/4marks**
- ```
#include<stdio.h>
void main ()
{
```

```
int i=10;
while (i>0)
{
printf("Hello %d\n",i);
i=i-1;
if(i==6)
{
break;
}
}
```

C. what are all predefined data types in C++ ?  
/ **5marks**