

# AMRITA VIDYALAYAM

## FIRST TERMINAL EXAMINATION 2018 -'19

Class : XII

Marks : 70

Time : 3 hrs

### COMPUTER SCIENCE (NO. 083)

**GENERAL INSTRUCTIONS:**

1. All questions are compulsory.
2. Programming Language: C++.

1. Out of the following, find those identifiers which cannot be used for naming variables, constants or functions in a C++ program. Justify. 2

`_AMOUNT, A%B, Float, 1stName, do, remove, XYZ123`

2. What is the role of a parameter/argument passed in a function? Can a default value be assigned to a parameter (Yes/No)? If yes, justify your answer with the help of a suitable example else give reason. 2

3. Which C++ header file (s) will be included to run /execute the following C++ code? 1

```
void main( )
{
    int Last =26.5698742658;
    cout<<setw(5)<<setprecision(9)<<Last;
}
```

4. Rewrite the following program after removing the syntactical errors (is any). Underline each correction. 2

```
typedef int Num;
Num full=100;
Num Calc(int X)
{
    full=(X>2)? 1:2;
    return (full%2)
}
void main
{
    int full=1000;
    full= Calc(::full)
    cout<<::full<<"::"<<full<<endl;
}
```

5. Find the output of the following program. 2

```
#include<iostream.h>
#include<ctype.h>
void main()
{
    char Mystring[ ]= "What*A*SURPRICE";
    for(int i=0; Mystring[i]!='\0';i++)
    {
        if(!isalpha(Mystring[i]))
            Mystring[i] = '&';
        else if(isupper(Mystring[i]))
            Mystring[i] = Mystring[i]+1;
        else
            Mystring[i]=Mystring[i+1];
    }
}
```

```
        cout<<Mystring;
```

```
    }
```

6. Find the output of the following program. Assume all required header files are already being included in the program. 3

```
struct Ticket
{
    char Level;
    int Price;
};
void Compute (Ticket &T)
{
    if(T.Level=='A')
        T.Price+=50;
    else if(T.Level=='B')
        T.Price+=30;
    else if(T.Level=='C')
        T.Price+=25;
    cout<<T.Level<<"::"<<T.Price<<endl;
}
void main( )
{
    Ticket Show[ ]={{C,250}, {A, 300}, {B, 350}};
    for(int count=2; count>=0; )
    {
        Compute(Show[count--]);
    }
}
```

7. Observe the following program carefully and answer the given questions. 4

```
#include<iostream.h>
#include<conio.h>
#include<stdlib.h>
void main( )
{
    clrscr( );
    randomize( );
    char courses[ ][10]= {"M.Tech", "MCA", "MBA", "B.Tech"};
    int ch;
    for(int i=1; i<=3; i++)
    {
        ch=random(i)+1;
        cout<<courses[ch]<<"\t";
    }
    getch( );
}
```

a) Out of all the four courses stored in the variables, which course will never be displayed in the output and which course will always be displayed at first in the output.

b) Mention the minimum and maximum value assigned to the variable ch.

8. What do you mean by inheritance? How to implement it in C++? 2

9. Define a class Customer with the following specifications. 4

Private Members:

CustomerNo integer

CustomerName string

Quantity integer

Price, TotalPrice, Discount, Netprice float

Member Functions:

Public members:

A constructor to assign initial values of Customer\_no as 111, Customer\_name as "Leena", Quantity as 0 and Price, Discount and Netprice as 0.

Input() – to read data members (Customer\_no, Customer\_name, quantity and Price) call Calcdiscout().

Calcdiscout () – To calculate Discount according to TotalPrice and Netprice.

TotalPrice = Price\*Qty.

TotalPrice >=50000 – Discount 25% of TotalPrice.

TotalPrice >=25000 and TotalPrice <50000 - Discount 15% of TotalPrice.

TotalPrice <250000 - Discount 10% of TotalPrice.

Netprice= TotalPrice-Discount

Show() – to display Customer details

10. Differentiate between access specifiers and visibility modes in C++. 2
11. What do you mean by function overloading? Give an example. 2
12. What are static class members? 2
13. What are different types of constructors in C++? Explain. 2
14. Answer the questions a) and b) after going through the following code. 2

```
class Student
{
    int rollno;
    char name[20];
public:
    Student (int a)                //constructor1
    {
        rollno=a;
    }
    Student (Student &b);{....}    //constructor2
}
```

a) Create an object such that it invokes constructor1.

b) Write a complete definition for constructor2.

15. Define multiple and multilevel inheritance in context of OOP. Give suitable example to illustrate the same. 3
16. Answer the questions a) to d) based on the following. 4

```
class City
{
    int City_Id;
    char City_Name[30];
protected:
    int City_Polution;
public:
    City( );
    void Get_Population( );
    void New_City( );
    void Show_City( );
};
class State: public City
{
    int State_Id;
    char State_Name[25];
protected:
    int State_Population;
public:
    State( );
    void New_State( );
}
```

```

        void Print_State( );
};
class Country: private State
{
    int Country_Id;
    char Country_Name[25];
public:
    Country( );
    void New_Country( );
    void Display_Country( );
};

```

a) Write name of the class whose constructor is invoked first on the creation of a new object of class Country.

b) Write name of the data members which are accessible through the object of class Country.

c) List name of the members which are accessible through the member function

```
void New_Country().
```

d) What will be the size(in bytes) of an object of class Country and State respectively.

17. Differentiate between text file and binary file. 2

18. Write a user-defined function named Count() that will read the contents of text file named "Report.txt" and count the number of lines which starts with either "T" or "M". 2

Eg. In the following paragraph, there are 2 lines starting with "T" or "M":

*"India is the fastest growing economy.*

*India is looking for more investments around the globe.*

*The whole world is looking at India as a great market.*

*Most of the Indians can foresee the heights that India is capable of reaching."*

19. Write a function display () in C++ to display all the students who have got distinction (scored percentage more than or equal to 75) from a binary file "stud.dat", assuming the binary file is containing the objects of the following class. 3

```

class student
{
    int rno;
    char sname [20];
    int percent;
public:
    int retpercent( )
    {
        return percent;
    }
    void getdetails( )
    {
        cin>>rno;
        gets(sname);
        cin>>percent;
    }
    void showdetails( )
    {
        cout<<rno;
        puts(sname);
        cout<<percent;
    }
};

```

20. What are constraints? What is the difference between degree and cardinality? 2

21. Differentiate between alternate key and foreign key in a relation. 2

22. Write SQL commands for the queries a) to d) and output for e) to h) based on the tables 'Watches' and 'Sale' given below.

6

Watches

Watchid	Watch_Name	Price	Type	Qty_Store
W001	High Time	10000	Unisex	100
W002	Life Time	15000	Ladies	150
W003	Wave	20000	Gents	200
W004	High Fashion	7000	Unisex	250
W005	Golden Time	25000	Gents	100

Sale

Watchid	Qty_Sold	Quarter
W001	10	1
W003	5	1
W002	20	2
W003	10	2
W001	15	3
W002	20	3
W005	10	3
W003	15	4

- a) To display all the details of those watches whose name ends with 'Time'.  
 b) To display watch's name and price of those watches which have price range in between 5000-15000.  
 c) To display total quantity in store of Unisex type watches.  
 d) To display watch name and their quantity sold in first quarter.  
 e) select max(price), min(qty\_store) from watches;  
 f) select quarter, sum(qty\_sold) from sale group by quarter;  
 g) select watch\_name, price, type from watches w, sale s where w.watchid!=s.watchid;  
 h) select watch\_name, qty\_store, sum(qty\_sold), qty\_store, sum(qty\_sold) "Stock" from watches w, sale s where w.watchid=s.watchid group by s.watchid;
23. Correct the following boolean statements. 2  
 a)  $X + 1 = X$       b)  $(A')' = A'$       c)  $A + A' = 0$       d)  $(A + B)' = A.B$
24. Draw the equivalent logic circuit diagram for the following Boolean expression. 2  
 $A'B' + B'C + C'D$
25. State and verify idempotence law. 2
26. Write the POS form of a Boolean Function F, which is represented in a truth table as follows. 2

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

27. Reduce the following boolean expression using K Map. **3**  
 $F(A, B, C, D) = \Sigma (0, 1, 3, 5, 6, 7, 9, 11, 13, 14, 15)$
28. Verify the following expression using boolean laws. **2**  
 $X + Z = X + X'Z + YZ$
29. Write down the dual form of the following. **1**  
 $AB + C'D + 1.0$