Choose the correct answer(s) : (50 Marks)

12

Which of the following is true about an object member function?
(2 Points)

- A) It can be called using the name of the class
- B) It can access static variables of the class
- C) It has a "this" pointer as an implicit parameter passed to it
- D) It can access the instance variables
- E) It cannot be overloaded
- F) It can call other member functions from inside it
- A & B & C
- B & C & E
- A & C & D & F
- B & C & D & F

13

Which of the following is true about the function prototype below?

void myFunc (int myDef=17, int myVar , int myNormalVar=5) ;
(2 Points)

- We should also give a default value to myVar
- We must only give a default parameter for myNormalVar and not the others
- The function is correct in that way

14

Which steps will allow Sub to compile?
(2 Points)

```
class Super
 {
    protected:
            Super (int a)
                {
                  this.a = a;     // Line 1
                }
   private:                        // Line 2
              int a;
 };
class Sub: public  Super
{
     public:
              Sub (int a) : Super (a)  { }
     public:
             Sub()                 //Line 3
            {
              this.a= 5;         //Line 4
            }
};
```

- A) Class Sub compile successfully
- B) Comment Line 2
- C) In Line 1 and 4 to, use (*this).a instead of this.a;
- D) Change Line 1 and 4 to, this(a);
- E) Change Line 3 to, Sub(): Super(5)
- F) Change Line 3 to, Sub(): this(5)

B & D

B & C & E

B & D & F

15

```
class Test
{
    int x;
public:
    Test( ) {  x = 0;   }
    Test(int y) {  x = y++; }
    Test(Test &r)   {  x = ++r.x;  }

    void print( )
    {
        cout<<x ;
    }
};
void main()
{
    Test t(1) ;
    t.print() ;
    Test x(t) ;
    x.print() ;
    t.print() ;
}
```

What will be the output when you compile and run the following piece of code?
(2 Points)

121

122

222

223

16

What will happen here
(2 Points)

```
class Parent
{
public:
    int x;
    Parent(int m)    { x = m ; }
};

class Child : protected Parent
{
public:
    int y;
    Child(int m, int n) : Parent(m) {    y = n ;  }
};

class GrandChild : public Child
{
    int z ;
public:
    GrandChild(int a, int b, int c) : Child(a,b) {  z = c ; }
};

void main( )
{
        GrandChild obj(3,5,7);
        cout<<"Value of x is: "<<obj.x <<endl ;              //Line 1
        cout<<"Value of y is: "<<obj.y <<endl ;              //Line 2
        cout<<"Value of z is: "<<obj.z <<endl ;              //Line 3
}
```

A) Compiler Error at Line 1

B) Compiler Error at Line 2

B) Compiler Error at Line 2

C) Compiler Error at Line 3

D) The code compiles successfully

A & C

B & C

A & B

17

What will be the output when you compile and run the following piece of code?
(2 Points)

```
class Parent
{
    int x;
    Parent(int m){ x = m ; }
};

class Child : public Parent
{
    public:
        int y;
        Child(int m, int n) : Parent(m) //Line 1
        {
            y = n ;
        }
};

void main( )
{
    Child obj(3,5,7);            //Line 2
    cout<<"Value of x is: "<<obj.x <<endl ;  //Line 3
    cout<<"Value of y is: "<<obj.y <<endl ;  //Line 4
}
```

A) Compiler Error at Line 1

B) Compiler Error at Line 2

C) Compiler Error at Line 3

D) The code compiles successfully

A & B

A & B & C

B & C

18

In order to turn a class into an abstract class, which of the following do we need to do?
(2 Points)

A) Write the abstract keyword before the name of the class

B Make the class a pure virtual class

C) Write one or more pure virtual functions inside the class

D) A & C

E) None of the above

19

```
class Parent
{
    int y;
    static int z;
public:
    Parent( )
    {
        z=0;    // Line1
    }

    Parent (int a=5)    //Line 2
    {
        y=a;
    }
};

void main( )
{
    Parent d(4);      //Line 3
    Parent m;         //Line 4
}
```

What will be the output when you compile and run the following piece of code?
(2 Points)

- Compilation Error at Line 1, an object member function cannot access a static member
- Compilation Error at Line 2, constructor should initialize static member (z=0;)
- Compilation Error at Line 3
- Compilation Error at Line 4
- The code compiles successfully

20

What will be the output when you compile and run the following piece of code?
(2 Points)

```
class Parent
{
protected:
    int x;
public:
    Parent(int m)
    {
        x = m ;
    }

    friend void display( );
};

class Child : public Parent
{
private:
    int y;
public:
    Child(int m, int n) : Parent(m)
    {
        y = n ;
    }
};
```

```
void display ()
{
    Child c(3,4);
    cout <<"x="<<c.x<<"y="<<c.y; // Line 1
}

void main ()
{
    display();
}
```

- A) Compilation Error at Line 1, Child::x is inaccessible
- B) Compilation Error at Line 1, Child::y is inaccessible
- C) A and B
- D) The code compiles successfully

21

What will be the output when you compile and run the following piece of code?
(2 Points)

```
class Nice
{
    int a ;
public:
    Nice( ) { a = 0 ; }
    Nice(Nice & myN)
    {
```

```
        this->a =  myN.a ;
        cout<<"I am the copy constructor" ;
    }

    void setA(int m)
    {
        a = m;
    }

    int getA() { return a ; }
};

void show(Nice &obj)
{
        cout<<"I am the show function, value is: " << obj.getA() ;
}

void main()
{
    Nice n1;
    n1.setA(15) ;
    show(n1) ;
}
```

- I am the show function, value is: 15
- I am the show function, value is: 15 I am the copy constructor
- I am the copy constructor I am the show function, value is: 15
- I am the copy constructor

22

What will be the output when you compile and run the following piece of code?
(2 Points)

```
class A
{
     int x;
protected :
    int y ;
public :
    A(int x1=5,int y1=3)   { x=x1;     y=y1; }

    void M1( ) { cout <<"\n This is M1() in class A:Base class"; }

    void M3( ) { cout <<"\n This is M3() in class A:Base class"; }
};
class B : private A
{
    int w;
protected:
    int v;
public:
    B(int v1=3, int w1=9) { v=v1;   w=w1; }
    void M3()
    {
        M1( );   //Line 1
        y++;      //Line2
    }
};
```

```
class C: public B
{
public:
    void  M4( )
    {
        M1( );     //Line 3
        y++;       //Line 4
    }
};
void main()
{
    B b1;
    b1.M3( );        //Line 5
    b1.M1( );       //Line 6
}
```

- A) Compilation Error at Line 1
- B) Compilation Error at Line 2
- C) Compilation Error at Line 3
- D) Compilation Error at Line 4
- E) Compilation Error at Line 5
- F) Compilation Error at Line 6
- G) The code compiles successfully
- A & B & C
- C & D & F
- A & C & F

23

Which of the following most closely describes the process of overriding?

(2 Points)

- A class with the same name replaces the functionality of a class defined earlier in the hierarchy
- A function with the same name replaces the functionality of a function defined earlier in the inheritance hierarchy
- A function with the same name but different parameters gives multiple uses for the same function name
- Making a class abstract so that no objects can be declared from it

24

"A plane is a machine that has a motor and has wings".

"A refrigerator is a machine that has a motor and has shelves".

Which of the following best describes the previous statements as a set of classes?
(2 Points)

- 1 class: A machine class that has an attribute for the type of machine
- 2 classes: A plane class that has two attributes, and a refrigerator class that also has two attributes
- 3 classes: A machine class that has one attribute: motor. A plane class that inherits from the machine class. And a refrigerator class that inherits from the plane class
- 3 classes: A machine class that has one attribute: motor. A plane class that inherits from the machine class. And a refrigerator class that also inherits from the machine class

25

If we did not specify a constructor to the class, then :
(2 Points)

- we won't be able to create object of class
- we won't be able to create object of class, and compiler will give compilation error
- we won't be able to create object of class, and compiler will give warning
- it will generate run-time error
- None of the above

26

Assume you have a class M that contains a pointer to an object of class N. Assume that we declare an object of M in the main( ) function. When will the body of the constructor of class N be executed?
(2 Points)

- When any member function of the class M is called
- After the body of the constructor of class M is executed
- Before the body of the constructor of class M is executed
- None of the above

27

What will be the output when you compile and run the following piece of code?
(2 Points)

```
class Parent
{
protected:
    int myVar;
public:
    Parent(int x)
    {
        myVar=x;
    }
```

```
class Child : public Parent
{
protected:
    int myData;
public:
    Child(int a, int b) : Parent(a)
    {
        myData= b;
    }

    void powerTwo()
    {
        cout <<myData*myData;
    }
```

```
    void powerTwo()
    {
        cout<<myVar*myVar;
    }

    virtual void powerThree()
    {
        cout <<myVar*myVar*myVar;
    }
};
```

```
    void powerThree()
    {
        cout<<myData*myData*myData;
    }
};

void main()
{
    Child myCh(2,3);
    Parent *myPtr;
    myPtr = &myCh;
    myPtr->powerTwo(); //Line1
    myPtr->powerThree(); //Line 2
}
```

- ◯ 4 8
- ◯ 4 27
- ◯ 9 27
- ◯ 9 8
- ◯ Compilation Error at Line 1
- ◯ Compilation Error at Line 2

28

```
s Child : public Base

ic:
Child(int x)
{
}

Child(int x, int y) : Base(
{
}
```

In order for the following piece of code to compile successfully, what are the constructors that are expected to exist in the Base class?
(2 Points)

- ◯ Base( ) and Base(int , int)
- ◯ Base( ) and Base(int)
- ◯ Base(int) and Base(int , int)
- ◯ Base(int , int)

29

```
class Stack
{
    int tos,size;
    int * st;
    Stack( int s=5)
    {
        tos=0;size=s;
        st=new int[size];
    }

    ~ Stack( ){ delete []st;}
};
```

what shall we add to class Stack to declare another object s2 from class Stack where s2 is declared in terms of s1 => Stack s2(s1)?
(2 Points)

- ◯ A) We must specify overload of assignment operator for class Stack
- ◯ B) We must define a copy constructor to class Stack
- ◯ C) A and B
- ◯ D) This situation cannot be achieved in C++, however, it has been solved in other programming languages

30

```
class Point
{
    float x, y;
    Point (float a, float b)
```

```
    {
        x=a;
        y=b;
    }

    Point()
    {
        x=0;
        y=0;
    }
};
```

To write copy constructor to class Point, what would be its signature?
(2 Points)

- Point (Point)
- Point (Point &)
- Point & Point (Point &)
- Point & Point (Point)
- None of the above

31

Assume you have a member function with the following prototype?

void myFunc(int x) ;

Which of the following are valid ways to overload it?
(2 Points)

- A) void myFunc(char ch) ;
- B) int myFunc(int x) ;
- C) void myFunc(char c1, char c2) ;
- D) float myFunc(int x, int y) ;
- A & C
- A & C & D
- A & B & D

32

```
class Base
{
public:
    Base()
    {
        cout<<"Welcome  " ;
    }
};

class Derived : public Base
{
public:
    Derived()
    {
        cout<<"Hello    " ;
    }
};

void main()
{
    Base myBase ;
    Derived myDerived ;
}
```

What will be the output when you compile and run the following piece of code?
(2 Points)

- Welcome Hello
- Hello Welcome
- Welcome Hello Welcome

- ◯ Welcome Welcome Hello

33

What does the following piece of code do?

```
void main( )
{
      float *ptr ;
      ptr = new float[15];
}
```

(2 Points)

- ◯ Allocate space for a float variable that is not initialized
- ◯ Allocate space for an array of 15 float elements that are not initialized
- ◯ Allocate space for an array of 15 float elements that is initialized by the value 0
- ◯ Allocate space for an array of 15 float elements where all the elements are initialized by the value 15
- ◯ Compiler Error.

34

Which of the following statements are true about constructor?
(2 Points)

- ◯ A) A constructor can be overloaded.
- ◯ B) A constructor is a special member function with the same name of the class.
- ◯ C) A constructor can return a primitive or an object reference.
- ◯ D) All the above
- ◯ E) A & B
- ◯ F) A & C

35

What will be the output when you compile and run the following piece of code?
(2 Points)

```
class GrandFather
{
public:
    virtual void displayStuff() = 0 ;

    virtual void sayThings() = 0 ;
};


class Parent : public GrandFather
{
public:
    void displayStuff()
    {
        cout<<"Parent's Stuff" ;
    }
};
```

```
class Child : public Parent
{
public:
    void sayThings()    {  cout<<"Child's Things" ; }
};

class GrandChild : public Child
{
public:
    void displayStuff( )
    {
        cout<<"GrandChild's Stuff" ;
    }

    void sayThings( )
    {
        cout<<"GrandChild's Things" ;
    }
};

void main( )
{
    GrandFather myGF ;  // Line 1
    Parent myP ;              //  Line 2
    Child myCh ;              //  Line 3
    GrandChild myGC ;  //  Line 4
    GrandFather * ptr ;  //   Line 5
}
```

- ◯ A) Compiler Error at Line 1
- ◯ B) Compiler Error at Line 2
- ◯ C) Compiler Error at Line 3
- ◯ D) Compiler Error at Line 4
- ◯ E) Compiler Error at Line 5
- ◯ F) The code compiles successfully
- ◯ G) A & B

H) C & E

I) A & B & D

36

```
class Tester
{
public:
    int x ;
    static int var ;
    Tester(int a)
    {
        x = a ;
    }

    static void myFunction(int a)
    {
        Tester obj(9) ;        // Line 1
        obj.x=a ;              // Line 2
        cout<<obj.x;
    }
};
int Tester::var=0;

void main()
{
    Tester myT(7) ;
    Tester::myFunction(15);
    cout<<myT.x ;
    cout<<Tester::var<<endl ;        // Line 3
}
```

What will be the output when you compile and run the following piece of code?
(2 Points)

15 7 0

7 15 0

15 9 0

9 15 0

Compilation error at line 1

Compilation error at line 2

Compilation error at line 3

None of the above

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