**MCQ SECTION**

**Q1.Predict the output**(SCORE-2)

#include<iostream>

using namespace std;

class B1

{

public:

B1()

{

cout<<"\n In class class B1 constructor";

}  
~B1()  
{  
cout<<"\n In B1 destructor";      
}

};

class D:public B1

{

public:

D()

{

cout<<"\n In derived class D's constructor";

}  
~D()

{

cout<<"\n In derived class  D's Destructor";

}

};

int main()

{

B1 \*p=new D();  
delete p;  
return 0;

}

A.In class class B1 constructor In derived class D's constructor In B1 destructor In derived class D's Destructor

B.In class class B1 constructor In derived class D's constructor In derived class D's Destructor In B1 destructor

C.error

**D.In class class B1 constructor In derived class D's constructor In B1 destructor**

Q2.Statically created object for class X is:(SCORE-1)

A.  X \* obj=new X();

**B. X obj;**

C. X obj=new X();

D. None

Q3.Which of the following is NOT true about virtual functions? ((SCORE-1)

I. They cannot be static members

II. A virtual function can be a friend of another class

III. We can have virtual constructors, but we cannot have virtual destructors

IV. They are accessed by using object pointers

1. II only

b) III only

**c) Both II and III**

d) I, II and IV

Q4.Which of the following is/are valid ways to allocate memory for an integer by dynamic memory allocation in C++?((SCORE-1)

A.int \*p=new int(100);

B.int \*p; p=new int; \*p=100;

C.int \*p= NULL; p=new int; \*p=100;

**D.All of these.**

*PROBLEM STATEMENT-1(5 marks)*

Computer games often contain diﬀerent characters or creatures. For example, you might design a game in which alien beings possess speciﬁc characteristics such as name, color, number of eyes, or number of lives. Create an Alien class to Include the data members.Create two classes—Martian and Jupiterian—that descend from Alien. Supply each with a constructor that sets the Alien data ﬁelds with values you choose, and a method named toString() that returns a string that contains a complete description of the Alien.

Sample input

Marcel

Brown

2

1

Jaadoo

Green

1

2

Sample output

The alien Marcel is a martain.It is Brown in color,has 2 and can live 1 lives

The alien Jaadoo is a jupiterian.It is Green in color,has 1 and can live 2 lives

|  |  |  |  |
| --- | --- | --- | --- |
|  | TC1(score-2) | TC2(score-2) | TC3(score-1) |
| input | MONTY  PURPLE  1  1  PAA  RED  3  4 | CAMI  WHITE  1  2  AYA  BLACK  1  3 | NAVI  WHEATISH  2  1  OYO  PURPLE  1  1 |
| output | The alien MONTY is a martain.It is PURPLE in color,has 1 and can live 1 lives  The alien PAA is a jupiterian.It is RED in color,has 3 and can live 4 lives | The alien CAMI is a martain.It is WHITE in color,has 1 and can live 2 lives  The alien AYA is a jupiterian.It is BLACK in color,has 1 and can live 3 lives | The alien NAVI is a martain.It is WHEATISH in color,has 2 and can live 1 lives  The alien OYO is a jupiterian.It is PURPLE in color,has 1 and can live 1 lives |

**TAIL:**

|  |
| --- |
| int main()  {  char c[20],n[20];  int e;  int l;  cin.getline(n,20);  cin>>c;  cin>>e;  cin>>l;    martian m(n,c,e,l);  cin.ignore();  cin.getline(n,20);  cin>>c;  cin>>e;  cin>>l;  jupiterian j(n,c,e,l);  m.toString();  j.toString();  return 0;  } |

*PROBLEM STATEMENT-2(10 marks)*

Implement **runtime polymorphism** to calculate the volume of geometrical shapes.Use the following formulas and display the volume upto 3 decimal places (cout<<”volume=”<<fixed<<setprecision(3)<<volume **)**

**1.Volume of sphere= 4/3\*3.14\*radius\*radius\*radius**

**2.Volume of cylinder=3.14\*radius\*radius\*height**

**3.volume of cone=1/3\*3.14\*radius\*radius\*height**

**4.volume of cube= radius\*radius\*radius**

Choice 1for sphere,2 for cylinder,3 for cone,4 for cube

**Sample input 1**

1 //choice for sphere

3 //radius of sphere

**Sample output 1**

Volume of sphere is 112.757

**Sample input 2**

2 //choice for cylinder

3 //radius of cylinder

4 //height of cylinder

**Sample output 2**

Volume of cylinder is 113.040

**Sample input 3**

5 //choice

**Sample output 3**

wrong choice

**Code**

**Head:**

|  |
| --- |
| #include<iostream>  #include<iomanip>  using namespace std;  class geometricalshape  {  public:  virtual void volume()  {  cout<<"base";  }  }; |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Testcases | T1(score-3) | T2(score-3) | T3(score-2) | T4(score-2) |
| Sample input | 2  4  5 | 1  6 | 3  5  7 | 5 |
| Sample output | Volume of cylinder is 251.200 | Volume of sphere is 902.059 | Volume of cone is 181.335 | wrong choice |