**GROUP -3**

**QUESTION BANK**

**CHAPTER -3 CONSTRUCTOR & DESTRUCTOR**

**Low Level**

Q1. What is constructor?

Ans. A member function with the same name as its class is called constructor and it is used to initialize the objects of that class type with a legal initial value.

Q2. What is destructor?

Ans. A destructor is a member function having same name as its class but preceded by ~ sign and it de-initializes an object before it goes out of scope.

Q3. What are different types of constructors?

Ans. The different types of constructors are Default constructor, Parameterized constructor and Copy constructor.

Q4. What is default constructor?

Ans. A constructor that accepts no parameter is called the default constructor.

Q5. What is parameterized constructor?

Ans. A constructor that accepts parameters for its invocation is known as parameterized

Constructor.

Q6. Can constructor or destructor have return type?

Ans. constructor or destructors have no return type not even void.

Q7:- How many types of method to call constructors in OOP?

Ans:- There are two types of methods to call constructor-

1. By calling constructor Implicitly (ii) By calling constructor Explicitly

Q8:- What do you understand by Default constructor? What is its role?

Ans:- A default constructor one that takes no arguments. It is automatically invoked when an object is created without providing any initial values.

Q9:- Is the default constructor for class Test always Test::Test () ?

Ans:- No, A “default constructor” is a constructor that can be called with no arguments. Example- class Test

{ int a,b;

public: Test();

----- };

Q10:- What do you mean by a temporary instance of a class?

Ans:- A temporary instance of a class means an anonymous object (no name ) of the same class and which is shortlived.Its benefit is when an object is required only for very short time ( an expression or a statement ) .We need not reserved memory for it for long. A temporary object for the same purpose can be created which remains in the memory as long as the statement defining it is getting executed after the statement this object is automatically destroyed and memory is released. Therefore memory remains occupied only for the time when it is needed.

**Mid Level**

Q1:-What is significance of constructors in OOP?

Ans:- One major characteristic of OOP is its close correspondence with the real world entities.OOP objects also are created and scrapped. When an object is created, it must be constructed with some legal initial value automatically without being specified by programmer. Therefore, the constructor takes over this very important duty to initialization of an object being created and relieves us from this task.

Q2:- What do you understand by Default constructor? What is its role?

Ans:- A default constructor one that takes no arguments. It is automatically invoked when an object is created without providing any initial values.

Q3:- Write the special three characteristics of constructer?

Ans: - 1.Constructor functions are invoked automatically when the object are created.

2. No return type (not even Void) can be specified for a constructor.

3. A constructor may not be static.

Q4:-write a short note on the significant of the destructor?

Ans- OOP object are also created and scrapped off. An object that is existing must be scrapped off when it is no more needed. The task of scrapping off an object is carried out by a destructor’s destructor de -initializes an object and de allocated all allocated resources.

Q5:- What do you understand by Destructor? What is its role?

Ans:-Destructor is also a member function of a class which name is same as class name followed by ~(tild) symbol. Its role to deallocate the memory used by the object after destroys the scope of object.

Q6:- What is parameterized constructor? Explain with example?

Ans:- A constructor that accepts parameters for its invocation is known as parameterized constructor.

Example- class Test { int a,b; public: Test( int i,int j) { a=i; b=j; } };

Q7:-Answer the questions (i) and (ii) after going through the following class-

Class Race

{ int CarNo,Track;

Public: Race(); //function 1

Race(int CN); //function 2

Race(Race &R) //function 3

Void Register(); //function 4

void Drive(); //function 5 };

void main()

{ Race R; }

1. Out of the following,which of the options is correct for calling function 2?

Option 1-Race T(30); option 2-Race U(R);,

1. Name the feature of object oriented programming,which is illustrated by function1, function2 and function 3 combined together.

Ans:- (i) option 1 is correct (ii) Constructor Overloading.

Q 8:- Rewrite the following program after removing the synthetical errors

(if any). Underline each correction.

#include<iostream.h>

#include<stdio.h>

Class Mystudent

{ int StudentId=1001;

Char Name[20];

Public

MyStudent() { }

void Register()

{ cin>>StudentId; gets(Name); }

void Display()

{ cout<<StudentId<<”;”<<Name<<endl; } };

void Main()

{ Mystudent MS;

Register.MS();

MS.Display(); }

Ans:- #include<iostream.h>

#include<stdio.h>

Class Mystudent

{ int StudentId;

Char Name[20];

public:

MyStudent() { StudentId=1001; }

void Register()

{ cin>>StudentId; gets(Name); }

void Display()

{ cout<<StudentId<<”;”<<Name<<endl; } };

void main()

{ MyStudent MS;

MS.Register();

MS.Display(); }

Q.9Answer the questions (i) and (ii) after going through the following class:

class Patient

{char Disease[20];

int Age;

public:

Patient() //Constructor 1

{strcpy(Disease, “Swine Flu”);

Age = 20;

}

Patient(char \*d, int a) //Constructor 2

{ strcpy(Disease, d);

Age = a;

}

Patient(Patient & P); // Constructor 3

~Patient() //Destructor

{

cout<<” Patient Cured” ;

}

};

void main()

{

Patient P1(“Cold”,25); //Statement 1

Patient P2 = P1; //Statement 2

}

1. When object P2 is created, which constructor will be called and why?
2. Write complete definition for Constructor 3.

Ans -(i) Constructor 3 which is a copy constructor will be called to initialize object P2 with object P1.

(ii) Patient(Patient & P)

{ Disease=P.Disease;

Age = P.Age;

}

Q10 :-Discuss the various situations when a copy constructor is automatically invoked.

Ans:- 1. When an object is defined and initialized with another object of the same class type,then the copy constructor is invoked to copy the data values of one object to the other.

2. When an object is passed by the value to a function,then the copy of the passed object is created for the function by invoking the copy constructor.

3. When a function returns an object,the copy constructor creates a temporary object to hold the return values of the function returning an object.

**High Level**

Q1:- What is copy constructor? What do you understand by constructor overloading?

Ans: - A copy constructor is a constructor that defines and initializes an object with another object of same class.

Syntax- class name object 1;

class name object2 (object1); // copy constructor.

Constructor overloading refer to a class having multiple constructor definition each having different signature.

Q2:- Why is a destructor function required in a class? Illustrate with the help of example.

Ans:- During the constructor of an object by the constructor,resources are allocated for use. For example allocation of memory,opening of file etc.These allocated resources must be deallocated before the object is destroyed. A destructor is responsible for this task and perform all clean up jobs like closing a file,deallocating and releasing area automatically.

Q3:-Find the syntax error(s), if any (giving reason for error) in following-

Class ABC

{ int x=10; float y;

ABC()

{ y=5; } ~() { } }

void main( )

{ ABC a1,a2; }

Ans:-

|  |  |
| --- | --- |
| Erroneous Statements | Error and correction |
| 1. int x=10; | Data members can not be initialized with in a class. Hence int x; |
| 1. ~() { } | Name of destructor missing.Hence ~ABC(){ } |
| 1. } | Class definition should end with a semicolon. Hence }; |

Q4:- How many times is copy constructor called in following-

Sample func(Sample u)

{ Sample v(u); Sample w=v; return w; }

int main() { Sample x; Sample y= func(x); Sample z= func(y); return 0; }

Ans:- The copy constructor is called 8 times in this code.Each call to function func() requires to call copy constructor.

Q5 :-What will be order of constructor invocation for the following code-

class Date{ ; };

class Time { ; };

class Train { int train( ); Date dep\_date; Time dep\_time; };

int main( ) { Date D1; Time T1; Train TR1; }

Ans:- The order of constructor invocation will as follows-

1. Date:: Date() constructor for D1 object.
2. Time::Time() constructor for T1 object.
3. Date:: Date() for dep\_date(of TR1) object
4. Time::Time() constructor fordep\_time(ofTR1) object.
5. Train:: Train() for TR1 object.

Q6:-Find the output of following-

#include<iostream.h>

Class METRO

{ intMno,TripNo,PassengerCount;

Public: METRO(int Tmno=1)

{ Mno= Tmno; TripNo =0; PassengerCount=0; }

Void Trip(int PC=20)

{ TripNo++; PassengerCount +=PC; }

Void StatusShow()

{cout<<Mno<<”:”<<TripNo<<”:”<<PassengerCount<<endl; }};

Void main()

{ METRO M[5],T;

M.Trip(); T.Trip(50); M.StatusShow(); M.Trip(30);T.StatusShow();

M.StatusShow(); }

Ans:- Output- 5:1:20

1:1:50

5:2:5

Q7:- Answer the questions (i) and (ii) after going through the following class-

Class Book

{ int BookNo; char BookTitle[20];

Public: Book(); //function 1

Book(Book &); //function 2

Book(int, char[]) ; //function 3

void Buy(); //function 4

void Sell(); //function 5 };

void main()

{ ; ; }

1. Write statements in c++ to execute function3 and function 4 inside the main() function
2. Name the feature of object oriented programming,which is illustrated by function1, function2 and function 3 combined together.

Ans:- (i) Book B(10,”GABS”);

(ii) Constructor Overloading.

Q.8 Answer the questions (i) and (ii) after going through the following class:

class Interview

{ char Post[20];

int No\_Of\_Candidates;

public:

Interview() //Function 1

{

strcpy(Post, “Fresher”);

No\_of\_Candidates = 0;

}

Interview(char \*p, int n) //Function 2

{

strcpy(Post, p);

No\_Of\_Candidates = n;

}

Interview(Interview & I); //Function 3

~Interview() //Function 4

{

cout<<” Interview Over” ;

}};

1. Which concept of OOP is illustrated by Function 1 and Function 2 together? Write an example illustrating the calls for these functions.
2. Write complete definition for Function 3.

Ans-

(i) It illustrates the concept of Polymorphism through constructor overloading.

Interview obj;

Interview obj1(“Trainee”, 20);

*(½ mark for mentioning constructor overloading and ½ mark for remaining answer)*

(ii) Interview(Interview & I)

{ strcpy(Post, I.Post);

No\_Of\_Candidates = I. No\_Of\_Candidates;

}

Q9. Answer the following questions after going through the following class:

class Seminar{

int Time;

public:

Seminar(); //Function 1

void Lecture() //Function 2

{cout<<”Lectures in the seminar on”<<end1;}

Seminar(int); //Function 3

Seminar(Seminar &abc); //Function 4

~Seminar() //Function 5

{ cout<<”Vote of thanks”<<end1;}};

(i) In Object Oriented Programming, what is Function 5 referred as and when does it get invoked/called?

Ans : Function 5 is referred as destructor and it is invoked as soon as the scope of the object gets over.

(ii) In Object Oriented Programming, which concept is illustrated by Function 1, Function 3 and Function 4 all together?

Ans : Constructor Overloading (Polymorphism)

(iii) Which category of constructor - Function 1 belongs to? Write an example illustrating the calls for Function 1.

Ans : Default Constructor. Example to invoke function 1 → Seminar S;

(iv) Which category of constructor - Function 3 belongs to? Write an example illustrating the calls for Function 3.

Ans : Parameterised Constructor. Example to invoke function 3 → Seminar A(8);

(v) Which category of constructor - Function 4 belongs to? Write an example illustrating the calls for Function 4.

Ans : Copy Constructor. Example to invoke function 4 → Seminar S2(S);

Or Seminar S2 = S;

(vi) Write an example illustrating the calls for Function 3 explicitly.

Ans : Seminar A = Seminar(8);

Q10. Answer the following questions after going through the following class:

class Complex{

int x;

int y;

public:

Complex(); //Function 1

void disp() //Function 2

{cout<<”The Complex number is : “<<x<<” + “<<y<<”i”<<end1;}

Complex(int, int); //Function 3

Complex(Complex &abc); //Function 4 };

(i) Which category of constructor - Function 1 belongs to? Write an example illustrating the calls for Function 1.

Ans : Default Constructor. Example to invoke function 1 → Complex C;

(ii) Which category of constructor - Function 3 belongs to? Write an example illustrating the calls for Function 3.

Ans: Parameterised Constructor. Example to invoke function 3→Complex C(6,8);

(iii) Which category of constructor - Function 4 belongs to? Write an example illustrating the calls for Function 4.

Ans : Copy Constructor. Example to invoke function 4 → Complex C2(C);

Or Complex C2 = C;

(iv) Write an example illustrating the calls for Function 3 explicitly.

Ans : Complex C = Complex(6,8);

(v) Write an example illustrating the calls for Function 4 explicitly.

Ans : Complex C2 = Complex(C);

(vi) Write the complete definition for Function 1 to initialize x as 10 and y as 20.

Ans : Complex :: Complex ()

{ x = 10 ; y = 20; }