Question Bank

Programme: B.Tech. (IT)		**Subject Name:** Object Oriented Programming using C++ **L:** 3 **T:** 0 **P:** 0	
Semester: 3		**Subject Code:** PCIT-102	
Batch	2018 and onwards	**Class**	D2IT A and B

Part-A

Fundamental Concepts of a Programming Language

2 Marks:

1. Draw a diagram to represent the basic structure of a programin C++.
2. What do you mean by a token?
3. Differentiate between keywod and identifier.
4. Compare and contrast the variables and constants in C++. What are the rules to be followed for identifiers?

5 Marks

5. What is the need of data types in C++? Describe different data types alongwith their reprsentations and size in C++.
6. Give classification of operators available in C++ with the help of neat and clean diagram.
7. Define ternary operator. Compare it with if and if-else statement.
8. What do you mean by oprator precedence?
9. What is the needof type conversion? Discuss different types of type conversion in C++.

10 Marks

10. Classify the different statements available in C++.
11. Differentiate between nested if-else and switch statement.
12. Compare and contrast for, whileand do-while looping statements.
13. Differentiate between break and continue statement.
14. Why the use of goto statement is not good for quality programming?
15. What is the need of array. Discuss different types of arrays.
16. Discuss different string handling functions available in C++.

Object Oriented Paradigm

2 Marks:

1. What is the need of Object Oriented Programming paradigm?
2. Define Encapsulation and Data hiding.
3. Define Data Abstraction.
4. Define Data members.
5. Define Member functions.
6. Define Inheritance.
7. Define Polymorphism.

5 Marks:

8. Compare and contrast the structured programming and object oriented programming.
9. What are the features of Object oriented programming.
10. List and define the two types of Polymorphism.
11. Define Dynamic Binding.
12. Define Message Passing.
13. List some benefits of OOPS.
14. List out the applications of OOP.
15. What is the return type of main ()?

10 Marks:
16. Explain the concept of polymorphism by an example in C++.

17. Compare and Contrast late binding and early binding.

Classes and Objects

2 Marks:
1. Define class and objects.
2. Write down the syntax and example to create a class.
3. Define reference variable. Give its syntax.
4. Define instance variables.

5 Marks:

5. What are the different ways to define member functions of a class. What is the role of scope resolution operator in the definition of member function?

6. What is the need of passing objects as arguments. Discuss different ways to pass objects as arguments to a function.
7. Discuss the benefits of retrurning objects from functions.

10 Marks:
8. Write a program to add two complex numbers using object as arguments.
9. Write a program to add two distances.

Object Initialization and Cleanup

2 Marks:
1. Discuss the use of public, private and protected access specifiers and their visibility in the class.
2. What is constructor?

5 Marks
2. Disfferentate between pass by value and pass by reference. Also explain the pass by address in C++.
3.What is the need of constructor? How it is different from the member function?
4. Discuss default constructor and parameterized constructor with the help of an example in C++.
5. Write down the example of dynamic constructor in C++.
6. What is copy constructor?
7. Explain the use of destructor in C++.

10 Marks:
8. What is the significance of static data and member functions in C++?
9. Write down the program to demonstrate static keyword in c++.

Overloading and Inheritance

2 Marks:
1. What is the need of overloading operators and functions?
2.Write down the example to overload unary and binary operators in C++.

5 Marks:
3. Write down a C++ program to implement function overloading.

4.What is the need of inheritance?
5. Draw a diagram to represent the forms of inheritance.

10 Marks:

6. Discuss the role of acess specifiers in inheritance and show their visibility when they are inherited as public, private and protected.
7. Discuss the concept of generalization and aggregation.
8. How overriding is different from the overloading.
9. What is the use of super keyword in C++?

Part-B
Pointers and Run Time Polymorphism

2 Marks:

1. What is the need of abstract class in C++?

5 Marks:

2. Write a C++ program demonstrating use of the pure virtual function with the use of base and derived classes.
3. What is the use of this keyword in C++?

10 Marks:

4. Write a program to demonstrate friend function in C++.

Exception Handling

2 Marks:

1. Compare and contrast error and exception.
2. Draw a neat and clean diagram to show exception handling model in C++.

5 Marks:

3. Write down a detailed C++ program to demonstate the use of try, catch , throw and nested try.

10 Marks:

4. What is a user defined exception. Wirte down the scenario where we require user defined exceptions.
5. When do we need multiple catch blocks for a single try block? Give an example.

String Handling

2 Marks:

1. How string is used in C++? How can we create string object?

5 Marks:

2. Write a programin C++ to extract character from a string.
3. Draw a neat and clean sketch to show the different streams available in C++.

10 Marks:

4. What is role of manipulators in C++. Write down different manipulators in C++.
5. Differentiate between formatted and unformatted I/O. Discuss its different functions.

File Handling and Templates

2 Marks:

1. What are the file strams?
2. Explain the process of open,read,write and close files?

5 Marks:

3. Explain the role of seekg(),seekp(),tellg(),tellp(),function in the process of random access in a file.
4. Explain the Standard Template Library and how it is working.

10 Marks:

5. Write a C++ program using function template to find the product of two integer or floating point type of data.

Programming exercises (5 Marks Each)

1. Write a C++ program to demonstrate the overloading of a unary operator.
2. Write a C++ program to demonstrate the overloading of a binary operator.
3. Write a C++ program involving the type conversion from a basic data type to class type.
4. Write a C++ program involving the type conversion from a class type to basic data type.
5. Write a C++ program involving the type conversion from one class type to another class.
6. Write a C++ program involving overriding of member function.
7. Write a C++ program involving a virtual function.
8. Write a C++ program to demonstrate function overloading.
9. Write a C++ program involving multiple catch statements for a try block.
10. Write a C++ program involving the handling of exceptions in constructors and destructors.
11. Write a C++ program involving input/output using overloaded operators << and >> and member functions of I/O stream classes.
12. Write a C++ program involving a function template.
13. Write a C++ program involving a class template.
14. Write a C++ program involving working with a single file. Use ifstream and ofstream classes to write and read the information to and from a file using operators:- << and >>. Show how a file can be opened and closed.
15. Write a C++ program involving input/output operations on characters in a file. (Hint: put() and get() functions).
16. Write a C++ program involving reading and writing of class objects in a file.
17. Write a C++ program to update the contents of a file by accessing the contents randomly.

MCQ Questions (2 Marks Each)

1. What is the output of the following code?

```
#include<iostream.h>
#include<string.h>

void main()

{

        cout<<strlen("Hello, World.\n")<<"\n";

}
```

(a) 14 (b) 13 (c) 12 (d) None

2. What is the output of the following code?

```
#include<iostream.h>
void main()

{

        /* this is /* an example */ of nested comment
        */ cout<<123<<endl;


}
```

(a) 123 (b) Compile time error (c) None (d) Run time Error

3. What is the output of the following code?

```
#include<iostream.h>
void main()

{

        cout << ;

}
```

(a) 1 (b) Compile time error (c) NIL (d) None

4. What is the output of the following code? #include<iostream.h>

```
void main()

{

        int a = 20; int
        &n = a;
        n=a++;
        a=n++;

        cout<<a <<","<<n<<endl;

}
```

(a) 20, 20 (b) 20, 21 (c) 21, 22 <u>(d) None</u>

5. What is the output of the following code? #include<iostream.h>

```
void main()
{
    int a = 20,b=100;
    int &n = a;
    n=a++;

    n = &b;
    cout<<a <<","<<n<<endl;
}
```

(a) 21, 21 (b) 20, 21 (c) 21, 22 (d) Error

6. What is the output of the following code? #include<iostream.h>

```
void main()
{
    bool a=10;
    cout<<a<<endl;

}
```

(a) 10 (b) false (c) 1 (d) Error

7. What is the output of the following code? #include<iostream.h>

```
void main()
{
    int main; main = 100;
    cout<<main++<<endl;

}
```

(a) 101 (b) 100 (c) None (d) Error: one cannot use main as identifier

8. What is the output of the following code? #include<iostream.h>

```
void main()
{
        int a=0,x;
        x = ++a * --a;
        cout<<++a<< " " << a++ << " " << x <<endl;
 }
```

(a) 0, 0, 0 (b) 2, 0, 0 (c) 2, 2, 2 (d) 3, 2, 2

9. What is the output of the following code? #include<iostream.h>

```
void main()
{
        a=32;
        cout<<a<<endl;
        int a;
 }
```

(a) 32 (b) 0 (c) Compile time error (d) Run time error

10. Which of the following is not valid expression?

(a) 33 / 9 / 3 (b) 23 % (5 % 2) (c) 34 (7 / 3) (d) None

11. Evaluate the m%n++ expression, assuming m=24 and n=7

(a) 4 (b) 3 (c) 2 (d) None

12. Evaluate the m%++n expression, assuming m=24 and n=7

(a) 4 (b) 3 (c) 2 (d) None

13. Which of the following statement is true?

(a) ! (p || q) is the same as !p || !q

(b) !!!p is the same as !p

(c) p && q || r is the same as p && (q || r)

(d) None

14. Elements in an array are identified by a unique .

(a) symbol (b) order (c) subscript (d) data type

15. An address is a __ , while a pointer is a _

(a) variable, location (b) variable, position (c) constant, variable (e) None

16. 6.5 is a _____ constant.

(a) string literal (b) float literal (c) double literal (d) character literal

17. To execute a C++ program, one first need to translate the source code into object code. This process if called

(a) translating (b) sourcing (c) compiling (d) coding

18. What is wrong with the following program? #include<iostream.h>

```
void main()
{
    do
    {
        int b=0;
        cout<<b;
        b++;
    }while(b!=10);
}
```

(a) There is nothing wrong in the program.

(b) Variable 'b' must not be initialized in the loop

(c) Variable 'b' must not be declared in the loop

(d) The condition for while loop is not valid

19. Sending a copy of data to a program module is called

(a) recursion (b) passing a reference (c) passing a value (d) None

20. Each generic type in a template function definition is preceded by the keyword

(a) class (b) type (c) function (d) template

21. Which of the followings is not a C++ opoerator?

(a) ^= (b) .* (c) &= (d) ->>

22. What is the output of the following code?

```
#include<iostream.h>

void main()

{

        char p[]="This is a test";
        cout<<sizeof(p)<<","<<strlen(p);


 }
```

(a) 14, 14 (b) 15, 14 (c) 14, 15 (d) 15,15

23. What is wrong with the following program?

```
#include<iostream.h>
void main()

{

        int a[5] = {0};
        for(int i=0;i<2;i++)
        a[i]=i;


        for(int i=0;i<5;i++)
        cout<<a[i]<<endl;

}
```

(a) Array 'a' is not initialized properly (b) There is no problem

(c) Redeclaration of variable 'i' (d) There is a run time error

24. What is the output of the following code? #include<iostream.h>

```
void main()

{

        int a[5] =
        {100,2,3,22,400}; int b[5];


        b=a;

        for(int i=0;i<5;i++)
        cout<<b[i]<<endl;

}
```

(a) 100,2,3,22,400 (b) garbage values (c) error (d) None

25. What is the output of the following code? #include<iostream.h>

```
void main()

{

        int a[5] = {1,2,3};

        for(int i=0;i<5;i++)

        cout<<a[i]<<endl;

}
```

(a) No output (b) 1 2 3 garbage garbage

(c) 1 2 3 0 0 (d) There is a run time error

26. To delete a dynamically allocated array named 'a', the correct statement is

(a) delete a; (b) delete a[0]; (c) delete []a; (d) delete [0]a;

27. Which of the followings is not a valid assignment statement?

(a) total = 9; (b) name = "CDAC";

(c) profit = 123.123; (d) A = 'A';

28. When do preprocessor directives execute?
(a) Before the compiler compiles the program.

(b) After the compiler compiles the program.

(c) At the same time as the compiler compiles the program.

(d) None

29. What is the output of the following code? #include<iostream.h>

```
void main()

{

        int i=5,j=0;
        while(i-- || j++)


        {

                cout<<i<<" "<<j<<",";

        }

}
```

(a) 5 1, 4 2, 3 3, 2 4, 1 5, (b) 4 0, 3 0, 2 0, 1 0, 0 0,

(c) 4 1, 3 2, 2 3, 1 4, 0 5, (d) None

30. What is the output of the following code? #include<iostream.h>

```
void main()

{

        int a;
        bool b;

        a = 12 > 100; b = 12 >=
        100; cout<<a<<"
        "<<b<<endl;


}
```

(a) Error (b) 0 false (c) 0 1 (d) 0 0

31. What is the output of the following code? #include<iostream.h>

```
int a = 1;
void main()
{
        int a = 100;
        {
                int a = 200;
                {
                        int a = 300;
                        cout<<a<<",";
                }
                cout<<a<<",";
        }
        cout<<a<<",";
        cout<<::a<<",";
}
```

(a) Error (b) 100, 200, 300, 100,

(c) 300, 200, 100, garbage, (d) 300, 200, 100, 1,

32. What is the output of the following code? #include<iostream.h>
void main()

```
{
        int x=10;
        (x<0)?(int a =100):(int a
        =1000); cout<<a;
}
```

(a) Error (b) 1000 (c) 100 (d) None

33. What is the output of the following code? #include<iostream.h>
void main()

```
{
        int a = 0;
        cout<<(a = 10/a);

}
```

(a) 0 (b) 1 (c) Compile Time error (d) Runtime Error

34. What is the output of the following code? #include<iostream.h>

```
void main()

{
        int x=0;
        while(x++<5)

        {
                static x;

                x+=2;

                cout<<x<<" ";

         }

}
```

(a) 1 2 3 4 5 (b) 2 4 6 8 10 (c) Compile Time error (d) Runtime Error

35. What is the output of the following code? #include<iostream.h>

```
void main()

{
        char str1[]=”India”,
        str2[]=”India”; if(str1==str2)


                cout<<”Both the string are same”;

        else

                cout<<”Both the string are not same”;

}
```

(a) Both the string are same (b) Both the string are not same

(c) Compile Time error (d) Runtime Error

36. What is the output of the following code if user enters “This is a test”? #include<iostream.h>
#include<string.h>
void main()

{

```
char str[8];
cin>>str;
cout<<str;
```

}

(a) This is a test (b) This is a (c) This (d) Error

37. What is the output of the following code? #include<iostream.h>

void main()

{

```
int arr[] = {10,20,30,40,50};
int *ptr = arr;

cout<< *ptr++<<" "<<*ptr;
```

}

(a) 10 20 (b) 10 10 (c) 20 20 (d) 20 10

38. What is the output of the following code? #include<iostream.h>

void main()

{

```
int arr[] = {10,20,30,40,50}; int
x,*ptr1 = arr, *ptr2=&arr[3];

x = ptr2 - ptr1;

cout<<x;
```

}

(a) 6 (b) 3 (c) Compile Time error (d) Runtime Error

39. Which of the following statement is false about pointers?
(a) The ++ and -- operators may be used with pointer variables

(b) An integer may be added and subtracted from a pointer variable

(c) A pointer may be added to another pointer.

(d) A pointer may be subtracted from another pointer.

40. A null pointer is a pointer that contains
(a) the address 0 (b) the address that points to 0

(c) the address that points to '\0' (d) the address that points to -1

41. What is the output of the following code? #include<iostream.h>

```
void main()

{

        int arr[][3]={0,11,22,33,44,55};
        int *a = &arr[0][0];
        cout<<arr[1][2]<<" "<<*(a+3);

}
```

(a) 55 33 (b) 33 55 (c) Compile Time error (d) Runtime Error

42. What is the output of the following code? #include<iostream.h>

```
void main()

{

        int arr[2][3][2]={{{2,4},{7,8},{3,4},}, {{2,2},{2,3},{3,4},
        }}; cout<<(*(*(*arr+1)+2)+0)+7;


}
```

(a) 10 (b) 3 (c) garbage value (d) Error

43. What is the output of the following code? #include<iostream.h>

```
void main()

{
```

```
int arr[2][3][2]={{{2,4},{7,8},{3,4},}, {{2,2},{2,3},{3,4},
}}; cout<<**(*arr+1)+2+7;
```

}

(a) 16 (b) 7

(c) 11 (d) Error

44. The design of classes in a way that hides the details of implementation from the user is known as:

(a) Encapsulation (b) Information Hiding

(c) Data abstraction (d) All of the above

45. Which of the following keywords do you think can be used when declaring static members in a class?
(i) Public (ii)
Private (iii)
Protected

(a) i, ii and iii. (b) i and ii.

(c) Only i. (d) i and iii.

46. I want a nonmember function to have access to the private members of a class. The class must declare that function:
(a) friend (b) inline

(c) static (d) virtual

47. The ability to reuse objects already defined, perhaps for a different purpose, with modification appropriate to the new purpose, is referred to as
(a) Information hiding. (b) Inheritance.

(c) Redefinition. (d) Overloading.

48. What do you think is the outcome of calling a redefined non-virtual function using a base-class pointer?

(a) The appropriate redefined version of the function will be used.

(b) The base-class version of the function will always be used.

(c) The outcome is unpredictable.

(d) A run-time error will occur.

49. A class member that is to be shared among all objects of a class is called
(a) A const member (b) A reference parameter

(c) A static member (d) A function member

50. What is a base class?

(a) An abstract class that is at the top of the inheritance hierarchy.
(b) A class with a pure virtual function in it.
(c) A class that inherits from another class

(d) A class that is inherited by another class, and thus is included in that class.

51. A variable that is declared protected:

(a) Is visible only in the subclasses (and not in the class it is declared in).
(b) Is visible only in the class it is declared in.
(c) Is visible to all classes, but modifiable only in the class where it is declared.
(d) Is visible in the class it is declared in, and all of its subclasses.

52. What is a destructor?

(a) A function called when an instance of a class is initialized.
(b)A function that is called when an instance of a class is deleted.
(c) A special function to change the value of dynamically allocated memory.
(d) A function that is called in order to change the value of a variable.

53. In protected inheritance:

(a) The public members of the base class become public.
(b) The public members of the base class become protected.
(c) The protected members of the base class become private.
(d) The public members of the base class become inaccessible.

54. If a class declares a variable static, this means:

(a) Each instance of a class will have its own copy of the variable.
(b) Changing the variable in one instance will have no effect on other instances of the class.
(c) There will be only one instance of the variable initialized for all classes.
(d) Every instance of the class must consider the value of the static variable before initializing.

55. In case of a copy constructor, which of the following is true?
(a) Used to instantiate an object from another existing object

(b) To copy one object to another existing object.

(c) Can be a substitute for a '=' operator.

(d) All of the above.

56. A class declaring another class as a friend will:
(a) Have wine and cheese with that other friend.
(b) Allow that class to declare an instance of it in its list of private variables.
(c) Allow the other class (the one declared as friend) to access to the declaring class's private variables
(d) Allow the class declaring the other as a friend to access the declared class's private variables.

57. Which of the following can be virtual?
(a) constructors

(b) destructors

(c) static functions

(d) None of the above

58. Where is an exception generated?
(a) In the catch block
(b) In the throw clause
(c) In the constructor of a class
(d) Only when memory allocation fails.

59. Static member functions
_____

(a) can be used without an instantiation of an object.
(b) can only access static data.
(c) Both 1 and 2 are correct.
(d) Neither 1 nor 2 are correct.

60. What makes a class abstract?
(a) The class must not have method

(b) The class must have a constructor that takes no arguments

(c) The class must have a function definition equal to zero

(d) The class may only exist during the planning phase

61.

```
#include<iostream.h>
class Base
{
        int static i;
public:
        Base(){}
};

class Sub1: public virtual Base{};
class Sub2: public Base{};
class Multi: public Sub1, public Sub2 {};
void main()

{
        Multi m;
}
```

In the above program, how many times Base's constructor will be called?

(a) 1 (b) 2

(c) 3 (d) none

62.

```
#include<iostream.h>
namespace N1
{
        int f(int n) {return n*2;}
}
namespace N2
{
        int f(double n) {return n*3;}
}
void main()
{
        using N1::f;
```

```
    int i1=f(1.0);
    using N2::f;
    int i2=f(1.0);
}
```

In the above code what would be the values of i1 and i2

(a) i1=2 i2=2 (b) i1=2 i2=3

(c) i1=3 i2=2 (d) Error

63.

```
#include<iostream.h>
class Base
{
    public : int a;
    protected: int b;
    private: int c;
};

class Derived: Base
{
    int d;
    friend Friend;
};

class Friend
{
    Derived derived;
};
```

In the above code, which of the following variables can be accessed in "Friend"?

(a) only a and b (b) a,b and c

(c) only a (d) Error

64. What is the output of the following code?

```
#include<iostream.h>
```

```
int count=0; class
obj


{

public :

        obj(){count++;}
        ~obj(){count--;}

};

int main()

{

        obj A,B,C,D,E; obj F;

        {

                obj G;

        }

        cout<<count; return
        0;

}
```

(a) 0 (b) 5

(c) 1 (d) 6

65. What is the output of the following code?

```
#include<iostream.h>

int main()

{

        for(int ii=0;ii<3;++ii)

        {

                switch(ii)

                {

                case 0:cout<<"zero ";

                case 1:cout<<"one ";continue;

                case 2:cout<<"two ";break;

                }

        }

        return 0;

}
```

(a) zero one one two

(b) zero one two

(c) zero two

(d) none

66.What is the output of the following code?

```
#include<iostream.h>

class obj

{

public :

        obj(){cout<<"in ";}
        ~obj(){cout<<"out ";}

};

int main()

{

        obj A,B;

        {

                obj D;

        }

        obj E; return 0;

}
```

(a) in in in out in out out out	(b) in in in in out out out out
(c) in in in out in out out out	(d) none

67.What is wrong in the following code?

```
#include<iostream.h>

class Base

{

public :

        Base(){};

        virtual ~Base(){};

};

class Derived : protected Base

{

public:

        virtual ~Derived(){};

};
```

```
int main()
{
        Base *pb = new Derived(); return
        0;

}
```

(a) There is nothing wrong

(b) One cannot have a ‘Base’ pointer to ‘Derived’ since it is not derived publicly

(c) One need a derived class pointer to point to a derived class.
(d) One required to code a constructor for Derived.

68.What is the output of the following code?

```
#include<iostream.h>

class professor{public:professor(){cout<<"professor ";};}; class
researcher{public: researcher(){cout<<"researcher ";};};

class teacher: public professor{public: teacher(){cout<<"teacher ";};};

class myprofessor: public teacher, public virtual researcher
{public:myprofessor(){cout<<"myprofessor ";};};

int main()
{
        myprofessor obj;
        return 0;
}
```

(a) professor researcher teacher myprofessor
(b) researcher professor teacher myprofessor
(c) myprofessor teacher researcher professor
(d) myprofessor researcher professor teacher

69. What is the output of the following code?

```
#include<iostream.h>

class Parent
{
public:
        Parent(){Status();}
        virtual ~Parent() { Status();}
        virtual void Status(){cout<<"Parent ";}
```

```
};
class Child: public Parent
{
public:
        Child(){Status();}
        virtual ~Child() { Status();}
        virtual void Status(){cout<<"Child ";}
};
void main()
{
        Child c;
}
```

(a) Parent Parent

(b) Parent Child Child Parent

(c) Child Parent Parent Child
(d) Error

70. What is wrong in the following code?

```
#include<iostream.h>
class Base
{
public:
        virtual void Method()=0{n=1;}

private:
        int n;
};
class D1:Base {};
class D2:public D1
{
        int i;
        void Method(){i=2;}
};
```

```
int main()

{

        D2 test;

        return 0;

}
```

(a) There is no error.

(b) There is a syntax error in the declaration of “Method”.
(c) Class D2 does not have access to “Method”.
(d) Class D1 must define “Method”.