



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

Subject: Object Oriented Programming
(22316)



SYLLABUS

Chapter No.	Name of chapter	Marks With Option
1	Principle of Object Oriented programming	24
2	Classes and Object	30
3	Extending classes using inheritance	28
4	Pointers and polymorphism in C++	10
5	File operations	14
Total Marks :-		106

BOARD THEORY PAPER PATTERN FOR OOP (22316)

Q.1		Attempt any FIVE	5*2=10
	a)	Principle of Object Oriented programming	
	b)	Classes and Object	
	c)	Principle of Object Oriented programming	
	d)	Classes and Object	
	e)	File operations	
	f)	Classes and Object	
	g)	Extending classes using inheritance	
Q.2		Attempt any THREE	3*4=12
	a)	Principle of Object Oriented programming	
	b)	Extending classes using inheritance	
	c)	Classes and Object	
	d)	Pointers and polymorphism in C++	
Q.3		Attempt any THREE	3*4=12
	a)	Classes and Object	



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	b)	Principle of Object Oriented programming
	c)	Extending classes using inheritance
	d)	Classes and Object
	e)	Classes and Object
Q.4		Attempt any Three 3*4=12
	a)	Extending classes using inheritance
	b)	Principle of Object Oriented programming
	c)	Classes and Object
	d)	File operations
Q.5		Attempt any TWO 2*6=12
	a)	Pointers and polymorphism in C++
	b)	File operations
	c)	Classes and Object
Q.6		Attempt any TWO 2*6=12
	a)	Principle of Object Oriented programming
	b)	Extending classes using inheritance
	c)	Extending classes using inheritance

CLASS TEST - I

PAPER PATTERN

COURSE: - Object Oriented programming (22316)

PROGRAMME: - Computer Technology

Syllabus: -

Unit No.	Name of the Unit	Course Outcome (CO)
1	Principle of Object Oriented programming	CO-316-1
2	Classes and Object	CO-316-2
3	Extending classes using inheritance	CO-316-3

Q.1	Attempt any FOUR 4*2=8Marks	Course Outcome (CO)
a)	Principle of Object Oriented programming	CO-316.1
b)	Principle of Object Oriented programming	CO-316.1
c)	Classes and Object	CO-316.2
d)	Classes and Object	CO-316.2
e)	Extending classes using inheritance	CO-316.3
f)	Classes and Object	CO-316.2
Q.2	Attempt any TWO 2*6=12Marks	
a)	Principle of Object Oriented programming	CO-316.1
b)	Extending classes using inheritance	CO-316.3
c)	Classes and Object	CO-316.2



CLASS TEST - II

PAPER PATTERN

COURSE: - Object Oriented Programming (22316)

PROGRAMME: - Computer Technology

Syllabus

Unit No.	Name of the Unit	Course Outcome (CO)
3	Extending classes using inheritance	CO-316-3
4	Pointers and polymorphism in C++	CO-316-4
5	File operations	CO-316-5

Q.1	Attempt any FOUR	4*2=8Marks	Course Outcome (CO)
a)	Extending classes using inheritance		(CO-316.3)
b)	Pointers and polymorphism in C++		(CO-316.4)
c)	Pointers and polymorphism in C++		(CO-316.4)
d)	Extending classes using inheritance		(CO-316.3)
e)	File operations		(CO-316.5)
f)	File operations		(CO-316.5)
Q.2	Attempt any TWO	2*6=12Marks	
a)	Extending classes using inheritance		(CO-316.3)
b)	Pointers and polymorphism in C++		(CO-316.4)
c)	Pointers and polymorphism in C++		(CO-316.4)
d)	File operations		(CO-316.5)



COURSE OUTCOME

(CO)

COURSE: Object Oriented Programming (22316)
PROGRAMME: - Computer Technology

CO.NO	Course Outcome
CO-316.01	Develop C++ program to solve problem using Procedure Oriented Approach.
CO-316.02	Develop C++program using classes and objects.
CO-316.03	Implement Inheritance in C++ program.
CO-316.04	Use Polymorphism in C++ program.
CO-316.05	Develop C++ program to perform file operations.



1. Principles of Object Oriented Programming

Position in Question Paper

Total Marks-14

Q.1. a) 2-Marks.

Q.1 b) 2-Marks

Q.1 e) 2-Marks

Q.2. c) 4-Marks.

Q.3. a) 4-Marks.

Q1. Explain Need of OOP.

Q2. List any four Object Oriented languages.

Q3. Write any four features of object oriented programming.

Q4. Differentiate between OOP & POP.

Q5. Explain the structure of C++ program with suitable example.

Q6. Explain different operator used in C++.

Q7. Describe syntax of cin & cout with example.

Q8. Explain the Scope resolution operator.

Q9. What is function? What is call by value? What is call by reference? What is difference between them?

Q10. Give syntax and example of defining structure and declaring structure variables.

Q11. Write a C++ program to find whether the entered number is even or odd.

Q12. Write a C++ program to declare a structure employee with member as empid and empname. Accept and display data for one employee using structure variable

Q13. Define a structure with its syntax.

Q14. Write a program to display largest element from entered array.

Q15. Write a program to swap two integer values by using call by reference.

Q16. Write a program to find whether a string is palindrome or not.

Q17. Write a C++ program to accept array of five elements, find and display smallest number from an array.

Q18. Write a C++ program to print multiplication table of 7. (example $7*1=7$ $7*10=70$)

Q19. Write a program to find whether the entered number is even or odd

Q20. Write a C++ program to declare a structure employee with member as empid and empname. Accept and display data for one employee using structure variable.

MCQ Question

(Total number of Question=Marks*3=14*3=42)

- 1 . Which is private member functions access scope?
 - a) **Member functions which can only be used within the Class.**
 - b) Member functions which can used outside the class
 - c) Member functions which are accessible in derived class
 - d) Member functions which can't be accessed inside the class
- 2) Which among the following is true?
 - a) The private members can't be accessed by public members of the class
 - b) The private members can be accessed by public members of the class**
 - c) The private members can be accessed only by the private members of the class
 - d) The private members can't be accessed by the protected members of the class
- 3) Which member can never be accessed by inherited classes?
 - a) Private member function**
 - b) Public member function
 - c) Protected member function
 - d) All can be accessed
- 4) Which syntax among the following shows that a member is private in a class?
 - a) Private: function Name(parameters)
 - b) private(function Name(parameters))
 - c) private function Name(parameters)**
 - d) private::function Name(parameters)
- 5) If private member functions are to be declared in C++ then
 - a) private: <all private members>**
 - b) private <member name>
 - c) private (private member list)
 - d) private :- <private members>
- 6) In java, which rule must be followed?
 - a) Keyword private preceding list of private member's
 - b) Keyword private with a colon before list of private member's
 - c) Keyword private with arrow before each private member
 - d) Keyword private preceding each private mem**
- 7) How many private member functions are allowed in a class?
 - a) Only 1
 - b) Only 7
 - c) only 255
 - d) as many as required**
- 8) How to access a private member function of a class?
 - a) Using object of class
 - b) Using object pointer
 - c) Using address of member function**
 - d) Using class address



- 9) Private member functions _____
- a) **can't be called from enclosing class**
 - b) can be accessed from enclosing class
 - c) can be accessed only if nested class is private
 - d) can be accessed only if nested class is public
- 10) Which function among the following can't be accessed outside the class in java in same package?
- a) public void show ()
 - b) void show()
 - c) **protected show()**
 - d) static void show as public through Protected()
- 11) If private members are to be called outside the class, which is a good alternative?
- a) **Call a public member function which calls private function**
 - b) Call a private member function which calls private function
 - c) Call a protected member function which calls private function
 - d) Not possible.
- 12) Which error will be produced if private members are accessed?
- a) **Can't access private message because of the large code**
 - b) Code unreachable
 - c) Core dumped
 - d) Bad code
- 13) C++ does not having following feature
- a)Data Hiding
 - b)Polymorphism
 - c) Encapsulation
 - d)**Static Member Function**
- 14) Can main () function be made private?
- a) Yes, always
 - b) yes, if program doesn't contain any classes
 - c) No, because main function is user defined
 - d) **No, never**
- 15)If a function in java is declared private then it _____
- a) Can't access the standard output
 - b) **Can access the standard output**
 - c) Can't access any output stream output through the sound
 - d) Can access only the output streams
- 16) Which of the following is not an OOP feature in C++?
- a) Encapsulation
 - b) Abstraction
 - c) Polymorphism
 - d) **Exception**



- 17) If container classes are carefully constructed, then these tools are available to work with structures that are not _____
- a) Valid without container cl
 - b) programmer-defined
 - c) **type-specific**
 - d) public
- 18) To be called object-oriented, a programming language must allow:
- a) functions that return values
 - b) Library of predefined functions
 - c) Inheritance
 - d) **All of these**
- 19) Which of the following statements is false?
- a) A function is a block of code that performs a specific task
 - b) Functions allow programmers to break large and complex problems into small and manageable task
 - c) Functions allow programmers to use existing code to perform common operations
 - d) **Functions can be called, or invoked, only once in a program**
- 20) A function that is called automatically each time an object is destroyed
- a) **Destructor**
 - b) Destroyer
 - c) Remover
 - d) Terminator
- 21) The #ifndef directive tests to see whether _____
- a) **A class has been defined**
 - b) A variable has been assigned a value
 - c) A class has no variable definitions
 - d) Any objects of the class have been instantiated.
- 22) Which of the following is not a type of constructor?
- a) Copy Constructor
 - b) **Friend Constructor**
 - c) Default Constructor
 - d) Parameterized Constructor
- 23) Which of the following concepts means determining at runtime what method to invoke
- a) Data hiding
 - b) Dynamic
 - c) **Dynamic binding**
 - d) Dynamic Loading
- 24) Which of the following is a mechanism of static polymorphism?
- a) Operator overloading
 - b) Function Overloading
 - c) Templates
 - d) **All of the above**
- 25) Which of the following approach is adapted by C++?
- a) **Top down**
 - b) Bottom Up
 - c) Left right
 - d) Right Lef
- 26) C++ was originally developed by
- a) Clocksi n and Mellish
 - b) Donald E. Knuth
 - c) Sir Richard Hadlee
 - d) **Bjarne Stroustrup**



- 27) cfront
- a) is the front end of a C compiler
 - b) is the pre-processor of a C compiler**
 - c) is a tool that translates a C++ code to its equivalent C code
 - d) none of the above
- 28) Which of the following are procedural languages?
- a) Pascal
 - b) Smalltalk
 - c) C
 - d) Both (a) and (c)**
- 29) Reusability is a desirable feature of a language as it
- a) Decreases the testing time
 - b) Lowers the maintenance cost
 - c) Reduces the compilation time
 - d) Both (a) and (b)**
- 30) Choose the correct remarks.
- a) C++ allows any operator to be overloaded.
 - b) Some of the existing operators cannot be overloaded.
 - c) Operator precedence cannot be changed
 - d) All of the above.**
- 31) Which of the following operators cannot be overloaded?
- a) >>
 - b)?:
 - c) .
 - d) Both (b) and (c)**
- 32) Overloading is otherwise called as
- a) Virtual polymorphism**
 - b) Transient polymorphism
 - c) Pseudo polymorphism
 - d) ad-hoc polymorphism
- 33) C++ encourages structuring. Software as a collection of components that are
- a) Highly cohesive and loosely coupled**
 - b) Not highly cohesive but loosely coupled
 - c) Highly cohesive and tightly coupled
 - d) Not highly cohesive but tightly coupled
- 34) Cout stands for
- a) Class output
 - b) Character output
 - c) **Console output**
 - d) call output
- 35) The fields in a structure of a C program are by default
- a) protected
 - b) public**
 - c) private
 - d) none of the above

36) Consider the declarations

```
char a;  
const char aa = 'h';  
char *na;  
const char *naa;  
Which of the following statements  
Statement I: aa = a;  
Statement II: na = &a;  
Statement III: na = &aa;  
is/are illegal?
```

- a) Only I and II
b) Only II and III
c) Only I and III
d) all the three statements are illegal
- 37) Forgetting to include a file (like cmath or math.h) that is necessary will result in
a) **Compilation error**
b) Warning when the program is run
c) Error at link time
d) Warning when the program is compiled
- 38) Which of the following comments about inline comments are true?
a) A function is declared inline by typing the keyword inline before the return value of the function
b) A function is declared inline by typing the keyword inline after the return value of the Function
c) A function that is declared inline may not be treated inline.
d) **Both (a) & (c).**
- 39) At what point of time a variable comes into existence in memory is determined by its
a) **scope**
b) storage class
c) data type
d) all of the above
- 40) Which of the following specifies need not be honored by the compiler?
a) register
b) inline
c) static
d) **Both (a) & (b)**
- 41) Which of the following cannot be declared static?
a) Class
b) Object
c) **Functions**
d) Both (a) & (b)
- 42) The order in which operands are evaluated in an expression is predictable if the operator is;
a) *
b) +
c) %
d) &&

2. Classes and Objects

Position in Question Paper

Total Marks-18

Q.1. b) 2-Marks.

Q.2 a) 4-Marks

Q.3 b) 4-Marks

Q.4. a) 4-Marks.

Q.5 a) 6-Marks.

Q1. Define class with its syntax.

Q2. Explain how memory is allocated to an object of a class with diagram.

Q3. State any two access specifier with example.

Q4. How many ways we can define member function in class? Give its syntax.

Q5. Difference between defining member function inside and outside class.

Q6. Compare structure and class.

Q7. Explain object as function argument.

Q8. List characteristics of static data member and static member function.

Q9. What do you mean by inline function? Write its syntax and example.

Q10. Polymorphism is implemented using function overloading. Justify the statement.

Q11. How do we invoke a constructor.

Q12. Describe constructor with syntax and example?

Q13. Explain types of Constructor with example.

Q14. What is parameterized constructor? Explain the example.

Q15. Explain overloaded constructor in class with suitable example.

Q16. Explain multiple constructors in class with example.

Q17. Explain constructor with default argument.

Q18. What is copy constructor? Give the syntax and example for copy constructor.

Q19. What is destructor? Give its syntax. How many destructors can be defined in a single class?

Q20. Differentiate between constructor and destructor.

Q21. Explain friend functions with example.

Q22. Why friend function is required? Give four characteristics of friend function.

Q23. Write a program to calculate area of circle and rectangle using the concept of function overloading.

Q24. Write a C++ program to declare a class „circle“ with data members as radius and area. Declare a function getdata to accept radius and putdata to calculate and display area of circle.

Q25. Write a C++ program to declare a class addition with data members as x and y . Initialize value of x and y with constructor. Calculate addition and display it using function display.”

MCQ Question

(Total number of Question=Marks*3=18*3=54)

- 1) Which of the following is not correct for virtual function in C++ ?
 - a) **Virtual function can be static.**
 - b) Virtual function should be accessed using pointers
 - c) Virtual function is defined in base class
 - d) must be declared in public section of class
- 2) How can we make a class abstract?
 - a) By declaring it abstract using the static keyword
 - b) By declaring it abstract is using the virtual keyword.
 - c) **By making at least one member function as pure virtual function**
 - d) By making all member functions constant
- 3) How many specifiers are present in access specifiers in class?
 - a) 2
 - b) 1
 - c) 4
 - d) **3**
- 4) Which of these following members are not accessed by using direct member access operator?
 - a) Public
 - b) **Private**
 - c) Protected
 - d) Both B & C
- 5) Which other keywords are also used to declare the class other than class?
 - a) **Struct**
 - b) Union
 - c) Object
 - d) Both struct & union
- 6) Which of the following is true?
 - a) All objects of a class share all data members of class
 - b) **Objects of a class do not share non-static members. Every object has its own copy**
 - c) Objects of a class do not share codes of non-static methods; they have their own copy
 - d) None of these
- 7) Which of the following can be overloaded?
 - a) Object
 - b) Operators
 - c) **Both A & B**
 - d) None of the above
- 8) Which is also called as abstract class?
 - a) Virtual function
 - b) Derived class
 - c) **Pure virtual function**
 - d) None of the mentioned
- 9) Which of the following statements is correct when a class is inherited publicly?
 - a) Public members of the base class become protected members of derived class.
 - b) Public members of the base class become private members of derived class.
 - c) Private members of the base class become protected members of derived class.
 - d) **Public members of the base class become public members of derived class.**

- 20) What is the size of empty class?
a) 0
b) 2
c) 4
d) 1
- 21) When struct is used instead of the keyword class means, what will happen in the program?
a) Access is public by default
b) Access is private by default
c) Access is protected by default
d) None of the mentioned
- 22) Which of the following is not a member of class?
a) Static Function.
b) Friend Function
c) Const Function
d) Virtual Function
- 23) Which of the following statements is incorrect?
a) Friend keyword can be used in the class to allow access to another class.
b) Friend keyword can be used for a function in the public section of a class.
c) Friend keyword can be used for a function in the private section of a
d) Friend keyword can be used on main ()
- 24) Which of the following statement is correct regarding destructor of base class?
a) Destructor of base class should always be static.
b) Destructor of base class should always be virtual.
c) Destructor of base class should not be virtual
d) Destructor of base class should always be private.
- 25) Which of the following two entities (reading from Left to Right) can be connected by the dot operator?
a) A class member and a class object
b) A class object and a class.
c) A class and a member of that class.
d) A class object and a member of that class
- 26) Which of the following statements is correct when a class is inherited publicly?
a) Public members of the base class become protected members of derived class.
b) Public members of the base class become private members of derived class.
c) Private members of the base class become protected members of derived class.
d) Public members of the base class become public members of derived class.
- 27). Which of the following statements is correct about the constructors and destructors?
a) Destructors can take arguments but constructors cannot.
b) Constructors can take arguments but destructors cannot.
c) Destructors can be overloaded but constructors cannot be overloaded.
d) Constructors and destructors can both return a value.
- 28) Which of the following access specifier is used in a class definition by default
a) Protected
b) Public
c) Private
d) Friend

- 29) Which of the following statement is correct with respect to the use of friend keyword inside a class
- a) A private data member can be declared as a friend
 - b) A class may be declared as a friend function.**
 - c) An object may be declared as a friend.
 - d) We can use friend keyword as a class name.
- 30) Which of the following keywords is used to control access to a class member
- a) Default
 - b) Default
 - c) Protected**
 - d) Asm
- 31) Which of the following can access private data members or member functions of a class?
- a) Any functions in the program.
 - b) All global functions in the program**
 - c) Any member function of that class.**
 - d) Only public member functions of that class.
- 32) Which of the following type of data member can be shared by all instances of its class
- a) Public
 - b) Inherited
 - c) Static**
 - d) Friend
- 33) Which of the following also known as an instance of a class?
- a) Friend Functions
 - b) Object**
 - c) Member Functions
 - d) Member Variables
- 34) Constructor is executed when ____.
- a) an object is created**
 - b) an object is used
 - c) a class is declared
 - d) an object goes out of scope.
- 35) Which of the following statements about virtual base classes is correct?
- a) It is used to provide multiple inheritances.
 - b) It is used to avoid multiple copies of base class in derived class**
 - c) It is used to allow multiple copies of base class in a derived class.
 - d) It allows private members of the base class to be inherited in the derived class.
- 36) How many objects can be created from an abstract class?
- a) **Zero**
 - b) One
 - c) Two
 - d) As many as we want
- 37) What does the class definitions in following code represent?
- ```
class Bike
{
 Engine objEng;
};
class Engine
{
 float CC;
};
```
- a) kind of relationship
  - b) has a relationship**
  - c) Inheritance
  - d) Both A and B

- 38) Which of the following statements is correct when a class is inherited privately
- a) Public members of the base class become protected members of derived class
  - b) Public members of the base class become protected members of derived class**
  - c) Public members of the base class become protected members of derived class
  - d) Public members of the base class become public members of derived class.
- 39) Which of the following statements is correct?
- a) Data items in a class must be private
  - b) Both data and functions can be either private or public**
  - c) Member functions of a class must be private.
  - d) Constructor of a class cannot be private
- 40) What does a class hierarchy depict?
- a) It shows the relationships between the classes in the form of an organization chart.
  - b) It describes "has a" relationships.
  - c) It describes "kind of" relationships**
  - d) It shows the same relationship as a family tree.
- 41) Which of the following can be overloaded?
- a) Object
  - b) Functions
  - c) Operators
  - d) Both B and C**
- 42) Which of the following means "The use of an object of one class in definition of another class"?
- a) Encapsulation
  - b) **Inheritance**
  - c) Composition
  - d) Abstraction
- 43) Which of the following is the only technical difference between structures and classes in C++?
- a) Member function and data are by default protected in structures but private in classes
  - b) Member function and data are by default private in structures but public in classes
  - c) Member function and data are by default public in structures but private in classes**
  - d) Member function and data are by default public in structures but protected in classes
- 44) Correct way of creating an object of a class called Car is
- a) Car obj;
  - b) Car \*obj = new Car();
  - c) Only B
  - d) A & B both**
- 45) In C++, Class object created statically (e.g. Car obj; and dynamically (Car \*obj = new Car() ; ) are stored in memory
- a) Stack, heap**
  - b) Heap, heap
  - c) Heap, stack
  - d) Stack, stack
- 46) In C++ programming, cout is a/an
- a) Function
  - b) Operator
  - c) Object
  - d) macro**
- 47) Which is Abstract Data Type in C++/
- a) Class**
  - b) Int
  - c) Float
  - d) array



- 48) Class allows only one object of it to be created though out the program life cycle
- a) **Singleton class**
  - b) Abstract class
  - c) Friend class
  - d) All classes
- 49). When you create an object of a class A like A obj; then which one will be called automatically
- a) **Constructor**
  - b) Destructor
  - c) Copy constructor
  - d) Assignment operator
- 50) The class in C++ which act only as a base class and object of it cannot be created is
- a) parent class
  - b) super class
  - c) **abstract class**
  - d) none of the above
- 51) Data members and member functions of a class in C++ program are by default
- a) protected
  - b) public
  - c) **Private**
  - d) None
- 52) By default functions available in C++ language are
- a) Constructor
  - b) Destructor
  - c) Copy constructor
  - d) **All**
- 53) In C++, an object cannot be created for
- a) An interface
  - b) An Abstract class
  - c) A singleton class
  - d) **a & b**
- 54) Which operator is used to allocate an object dynamically of a class in C++?
- a) Scope resolution operator
  - b) Conditional operator
  - c) **New operator**
  - d) Membership access

## 3. Extending Classes using Inheritance

Position in Question Paper

Total Marks-16

Q.1. c) 2-Marks.

Q.2 b) 4-Marks

Q.3 e) 4-Marks

Q.6. b) 6-Marks.

Q1.What is inheritance? Why inheritance used in C++.

Q2.What is base class? What is derived class? Give example.

Q3.State general format of defining derived class.

Q4.Write any two advantages of inheritance.

Q5.State different types of inheritance with diagram.

Q6.Explain single inheritance with diagram.

Q7.Explain function overriding with example.

Q8.Explain Multiple inheritance with example.

Q9.Explain virtual base class in inheritance with suitable diagram.

Q10.State different visibility modes used in inheritance.

Q11. Write a C++ program to declare a class „College“ with data members as name and college code.

Derive a new class „student“ from the class college with data members as sname and roll no.

Accept and display details of one student with college data.

Q12.Write a C++ program to declare a class COLLEGE with members as college code. Derive a new class as STUDENT with members as studid. Accept and display details of student along with college for one object of student.

Q13.What is hybrid inheritance? Give one example.



## MCQ Question

(Total number of Question=Marks\*3=16\*3=48)

- 1) When the inheritance is private, the private methods in base class are \_\_\_\_\_ in the derived class (in C++).
  - a) **Inaccessible**
  - b) Accessible
  - c) Protected
  - d) Public
- 2) Which design patterns benefit from the multiple inheritances?
  - a) **Adapter and observer pattern**
  - b) Code pattern
  - c) Glue pattern
  - d) None of the mentioned
- 3) What is meant by multiple inheritance?
  - a) Deriving a base class from derived class.
  - b) Deriving a derived class from base class
  - c) **Deriving a derived class from more than one base class**
  - d) None of the mentioned
- 4) What will be the order of execution of base class constructors in the following method of inheritance. class a: public b, public c {...};
  - a) **b(); c(); a();**
  - b) c(); b(); a();
  - c) a(); b(); c();
  - d) b(); a(); c()
- 5) Can we pass parameters to base class constructor though derived class or derived class constructor?
  - a) **Yes**
  - b) No.
  - c) May be
  - d) Can't Say
- 6) Inheritance allow in C++ Program?
  - a) Class Re-usability
  - b) Creating a hierarchy of classes
  - c) Extendibility
  - d) **All of the above**
- 7) What are the things are inherited from the base class.?
  - a) Constructors and it's Destructors
  - b) Operator=( ) members
  - c) Friends
  - d) **All of the above**
- 8) Which of the following advantages we lose by using multiple inheritance?
  - a) Dynamic binding
  - b) Polymorphism
  - c) **Both Dynamic Binding and polymorphism**
  - d) None of the mentioned
- 9) Which symbol is used to create multiple inheritance?
  - a) Dot
  - b) **Comma**
  - c) Dollar
  - d) None of Above
- 10) Which inheritance may lead to duplication of inherited members from a "grandparent" base class.
  - a) **Multipath**
  - b) Multiple
  - c) Multilevel
  - d) Hierarchical



- 11) C++ Inheritance relationship is?  
a) Association  
b) **Is-A**  
c) Has-A  
d) None of the above
- 12) In inheritance, order of execution of base class and derived class destructors are:  
a) Base to Derived  
b) Derived to Base  
c) Random order  
d) **None of the Above**
- 13) What is the difference between protected and private access specifiers in inheritance?  
a) Private member is not inheritable and not accessible in derived class  
b) **Protected member is inheritable and also accessible in derived class.**  
c) Both are inheritable but private is accessible in the derived class  
d) Both are inheritable but private is accessible in the derived class
- 14) Which value is placed in the base class?  
a) Derived Values  
b) **Default Type Values**  
c) Both A & B  
d) None of the mentioned
- 15) The friend functions and the member functions of a friend class can directly access the \_\_\_\_\_ data.  
a) **Private and protected**  
b) Private and Public  
c) Protected and Public  
d) Private, Protected and public
- 16) Class X, class Y and class Z are derived from class BASE. This is \_\_\_\_\_ inheritance.  
a) Multiple  
b) Multilevel  
c) **Hierarchical**  
d) Single
- 17) Reusability of the code can be achieved in CPP through  
a) Polymorphism  
b) Encapsulation  
c) **Inheritance**  
d) Both A and C
- 18) Which among the following best describes the Inheritance?  
a) Copying the code already written  
b) Using the code already written once  
c) Using already defined functions in programming language  
d) **Using the data and functions into derived segment**
- 19) How many basic types of inheritance are provided as OOP feature?  
a) **4**  
b) 3  
c) 2  
d) 1
- 20) Which among the following best defines single level inheritance?  
a) A class inheriting a derived class  
b) **A class inheriting a base class**  
c) A class inheriting a nested class  
d) A class which gets inherited by 2 classes
- 21) Which programming language doesn't support multiple inheritances?  
a) C++ and Java  
b) C and C++  
c) Java and SmallTalk  
d) **Java**
- 22) Which among the following is correct for a hierarchical inheritance?  
a) Two base classes can be used to be derived into one single class  
b) Two or more classes can be derived into one class  
c) **One base class can be derived into other two derived classes or more**  
d) One base class can be derived into only 2 classes



- 23) Which is the correct syntax of inheritance?
- a) class derived\_classname : base\_classname { /\*define class body\*/ };
  - b) class base\_classname : derived\_classname { /\*define class body\*/ };
  - c) class derived\_classname : access base\_classname { /\*define class body\*/ };**
  - d) class base\_classname :access derived\_classname { /\*define class body\*/ };
- 24) Which type of inheritance leads to diamond problem?
- a) Single level
  - b) Multi-level
  - c) Multiple**
  - d) Hierarchical
- 25) Which access type data gets derived as private member in derived class?
- a) Private**
  - b) Public
  - c) Protected
  - d) Protected and Private
- 26) If a base class is inherited in protected access mode then which among the following is true?
- a) Public and Protected members of base class becomes protected members of derived class.**
  - b) Only protected members become protected members of derived class.
  - c) Private, Protected and Public all members of base, become private of derived class.
  - d) Only private members of base, become private of derived class.
- 27) Members which are not intended to be inherited are declared as \_\_\_\_\_
- a) Public members
  - b) Protected members
  - c) Private members**
  - d) Private or Protected members
- 28) While inheriting a class, if no access mode is specified, then which among the following is true? (in C++)
- a) It gets inherited publicly by default
  - b) It gets inherited protected by default
  - c) It gets inherited privately by default**
  - d) It is not possible
- 29) If a derived class object is created, which constructor is called first?
- a) Base class constructor**
  - b) Derived class constructor
  - c) Depends on how we call the object
  - d) Not possible
- 30) How can you make the private members inheritable?
- a) By making their visibility mode as public only
  - b) By making their visibility mode as protected only
  - c) By making their visibility mode as private in derived class**
  - d) It can be done both by making the visibility mode public or protected
- 31) In case of inheritance where both base and derived class are having constructors, when an object of derived class is created then
- a) constructor of derived class will be invoked first
  - b) constructor of base class will be invoked first**
  - c) constructor of derived class will be executed first followed by base class
  - d) constructor of base class will be executed first followed by derived class
- 32) If the derived class is struct, then default visibility mode is \_\_\_\_\_ .
- a) public
  - b) protected
  - c) private**
  - d) struct can't inherit class







- 42) What should be the name of constructor?  
a) same as object  
b) same as member  
c) **same as class**  
d) none of the mentioned
- 43) What does derived class does not inherit from the base class?  
a) constructor and destructor  
b) friends  
c) operator = () members  
d) **all of the mentioned**
- 44) What is meant by polymorphism?  
a) **class having many forms**  
b) class having only single form  
c) class having two forms  
d) none of the mentioned
- 45) Which design patterns benefit from the multiple inheritance  
a) **Adapter and observer pattern**  
b) Code pattern  
c) Glue pattern  
d) None of the mentioned
- 46) What are the things are inherited from the base class?  
a) Constructor and its destructor  
b) Operator=()members  
c) Friends  
d) **All of the mentioned**
- 47) What is meant by multiple inheritances?  
a) Deriving a base class from derived class  
b) Deriving a derived class from base class  
c) **Deriving a derived class from more than one base class**  
d) None of the mentioned
- 48) Which of the following advantages we lose by using multiple inheritances?  
a) Dynamic binding  
b) Polymorphism  
c) **Both a & b**  
d) None of the mentioned



## 4. Pointers and Polymorphism in C++

Position in Question Paper

Total Marks-14

Q.1. f) 2-Marks.

Q.2 d) 4-Marks

Q.3 d) 4-Marks

Q.4. c) 4-Marks..

Q1. Define pointer variable .Give its syntax.

Q2. What are advantages of using pointer.

Q3. How address of (&) operator is used in pointer, explain with example.

Q4. Give significance of „&“ and „\*“ operator.

Q5. Explain pointer arithmetic with example.

Q6. What is pointer to array? Explain with example.

Q7. Explain memory management operator.

Q8. How pointer is assigned to object? Explain with simple example.

Q9. Explain „this“ pointer.

Q10. Explain the derived class access by pointer.

Q11. Explain Virtual Function with example .

Q12. What is need of virtual function? Explain with example.

Q13. Explain „pure“ Virtual function.

Q14. Explain Abstract class with example.

Q15. Define polymorphism. list types of polymorphism.

Q16. What is static polymorphism.

Q17. Compare Compile time polymorphism and Runtime polymorphism

Q18. Explain rules for operator overloading.

Q19. Write a program to find reverse of a string using pointer to string.

Q20. Write a program to overloaded binary ++ operator.

Q21. Write a program to overloaded – operator to negate value of variable.

Q22. Write a program to copy the content of one string to another string using pointer to string .

Q23. Write a program to declare a class Account having data member as acc\_no and balance.

Accept and display data for five object using pointer to array of object.

Q24. Write a program which concatenate and reverse string by using pointer to string.

Q25. Write a program for overloaded of ++ unary operator for inch of feet conversion. 12 inches = 1 feet

Q26. Write a program to copy content of one string to another string using pointer to string.



## MCO Question

(Total number of Question=Marks\*3=14\*3=42)

- 1) In compile-time polymorphism, a compiler is able to select the appropriate function for a particular call at the compile time itself, which is known as .....
  - a) early binding
  - b) static binding
  - c) static linking
  - d) All of the above**
- 2) ..... binding means that an object is bound to its function call at compile time.
  - a) late
  - b) static**
  - c) dynamic
  - d) fixed
- 3) C++ supports run time polymorphism with the help of virtual functions, which is called ..... binding.
  - a) dynamic**
  - b) run time
  - c) early binding
  - d) static
- 4) State whether the following statements about pointers in C++ are True.
  - a. pointer can be incremented (++) or decremented (-)
  - b. Any integer can be added to or subtracted from a pointer.
  - c. One pointer can be subtracted from another
    - a) a and b only
    - b) b and c only
    - c) a and c only
    - d) All a, b and c**
- 5) ..... are also known as generic pointers, which refer to variables of any type.
  - a) void pointers**
  - b) null pointers
  - c) this pointer
  - d) base pointer
- 6) The pointers which are not initialized in a program are called .....
  - a) void pointers
  - b) null pointers**
  - c) this pointer
  - d) base pointer
- 7) ..... is useful in creating objects at run time.
  - a) void pointer
  - b) null pointer
  - c) this pointer
  - d) object pointer**
- 8) A ..... refers to an object that that currently invokes a member function.
  - a) void pointers
  - b) null pointers
  - c) this pointer**
  - d) base pointer
- 9) The ..... cannot be directly used to access all the members of the derived class.
  - a) void pointers
  - b) null pointers
  - c) this pointer
  - d) base pointer**



- 10) Run time polymorphism is achieved only when a ..... is accessed through a pointer to the base class.
- a) member function
  - b) virtual function**
  - c) static function
  - d) real function
- 11) If a ..... is defined in the base class, it need not be necessarily redefined in the derived class.
- a) member function
  - b) virtual function**
  - c) static function
  - d) real function
- 12) ..... is a function declared in a base class that has no definition relative to the base class.
- a) member function
  - b) virtual function
  - c) pure virtual function**
  - d) pure function
- 13) State whether the following statements about virtual functions are True or False.
- i) A virtual function, equated to zero is called pure virtual function.
  - ii) A class containing pure virtual function is called an abstract class
- a) True, True**
  - b) True, False
  - c) False, True
  - d) False, False
- 14) The main objective of an abstract base class is to provide some traits to the derived class and to create a ..... required for achieving run time polymorphism.
- a) void pointers
  - b) null pointers
  - c) null pointers
  - d) base pointer**
- 15) State, whether the following statements about virtual functions are True.
- i) The virtual function must be a member of some class
  - ii) virtual functions cannot be static members
  - iii) A virtual function cannot be a friend of another class.
- a) i and ii only**
  - b) ii and iii only
  - c) i and iii only
  - d) All i, ii and iii
- 16) The important application of ..... is to return the object it points to.
- a) void pointers
  - b) null pointers
  - c) this pointer**
  - d) base pointer
- 17) The pointer to a function is known as ..... function.
- a) forward
  - b) pointer
  - c) callback**
  - d) backward
- 18) We can manipulate a pointer with the indirection operator (\*), which is also known as
- a) reference operator
  - b) dereference operator**
  - c) direction operator
  - d) indirection operator



- 19) Using the ....., we can change the contents of the memory location.
- a) reference operator
  - b) dereference operator**
  - c) direction operator
  - d) indirection operator
- 20) If we attempt to dereference an uninitialized pointer, it will ..... by referring to any other location in memory.
- a) cause a compile-time error
  - c) cause run time error**
  - b) run time error
  - d) executes
- 21) Which of the following is the correct way to declare a pointer ?
- a) int \*ptr**
  - b) int ptr
  - c) int &ptr
  - d) All of the above
- 22) Which of the following gives the [value] stored at the address pointed to by the pointer : ptr?
- a) Value (ptr)
  - b) ptr
  - c) &ptr
  - d) \*ptr**
- 23) A pointer can be initialized with
- a) Null
  - b) Zero
  - c) Address of an object of same type
  - d) All of the above**
- 24) Choose the right option string\* x, y;
- a) x is a pointer to a string, y is a string**
  - b) y is a pointer to a string, x is a string
  - c) Both x and y are pointers to string types
  - d) none of the above
- 25) Generic pointers can be declared with\_\_\_\_\_ .
- a) auto
  - b) void**
  - c) asm
  - d) None of the above
- 26) What is size of generic pointer in c?
- a) 0
  - b) 1
  - c) 2**
  - d) Null
- 27) Which from the following is not a correct way to pass a pointer to a function?
- a) Non-constant pointer to non-constant data
  - b) A non-constant pointer to constant data
  - c) A constant pointer to non-constant data
  - d) All of the above**
- 28) What does the following statement mean?  
int (\*fp)(char\*)
- a) Pointer to a pointer
  - b) Pointer to an array of chars
  - c) Pointer to function taking a char\* argument and returns an int**
  - d) Function taking a char\* argument and returning a pointer to int



- 29) A void pointer cannot point to which of these?
- a) Methods in c++
  - b) **Class member in c++**
  - c) Both A & B
  - d) None of the above
- 30) Referencing a value through a pointer is called
- a) Direct calling
  - b) **Indirection**
  - c) Pointer referencing
  - d) All of the above
- 31) Which of the following is the correct identifier?
- a) \$var\_name
  - b) **VAR\_123**
  - c) varname@
  - d) None of the above
- 32) Which of the following is the address operator?
- a) @
  - b) #
  - c) **&**
  - d) %
- 33) Which of the following features must be supported by any programming language to become a pure object-oriented programming language?
- a) Encapsulation
  - b) Inheritance
  - c) Polymorphism
  - d) **All of the above**
- 34) The programming language that has the ability to create new data types is called \_\_\_\_.
- a) Overloaded
  - b) Encapsulated
  - c) Reprehensible
  - d) **Extensible**
- 35) Which of the following statements is correct about the formal parameters in C++?
- a) **Parameters with which functions are called**
  - b) Parameters which are used in the definition of the function
  - c) Variables other than passed parameters in a function
  - d) Variables that are never used in the function
- 35) The C++ language is \_\_\_\_\_ object-oriented language.
- a) Pure Object oriented
  - b) Not Object oriented
  - c) **Semi Object-oriented or Partial Object-oriented**
  - d) None of the above
- 36) Which of the following features is required to be supported by the programming language to become a pure object-oriented programming language?
- a) Encapsulation
  - b) Inheritance
  - c) Polymorphism
  - d) **All of the above**
- 37) Which of the following comment syntax is correct to create a single-line comment in the C++ program?
- a) **//Comment**
  - b) /Comment/
  - c) Comment//
  - d) None of the above



- 38) C++ is a \_\_\_ type of language.
- a) High-level Language
  - b) Low-level language
  - c) **Middle-level language**
  - d) None of the above
- 39) For inserting a new line in C++ program, which one of the following statements can be used?
- a) **\n**
  - b) \r
  - c) \a
  - d) None of the above
- 40) Which one of the following represents the tab?
- a)\n
  - b) **\t**
  - c) \r
  - d) None of the above
- 41) Which of the following refers to characteristics of an array?
- a) **An array is a set of similar data items**
  - b) An array is a set of distinct data items
  - c) An array can hold different types of datatypes
  - d) None of the above
- 42) If we stored five elements or data items in an array, what will be the index address or the index number of the array's last data item?
- a) 3
  - b).5
  - c) **4**
  - d) 88





## 5. File Operations

Position in Question Paper

Total Marks-08

Q.1.g) 2-Marks.

Q.6 c) 6-Marks

Q1. Describe meaning of following:

ios :: in

ios :: out

get()

put()

Q2.Explain File attributes

Q3.Explain the any two file stream classes needed for the file manipulation.

Q4.What are stream extraction and stream insertion operators?

Q5.Explain the function used to read and write data in binary file.

Q6.List file mode operation.

Q7.Explain the namespace in C++ ,with their syntax and Rule with example

Q8.Write a C++ program to count number of spaces present in contents of file.

Q9.Write a C++ program to write "Welcome to poly" in a file .Then read the data from file and display it on screen

Q10.Write a program for reading and writing data in a file.

## MCQ Question

(Total number of Question=Marks\*3=08\*3=24)

- 1) Where does a cin stops its extraction of data
  - a) By seeing a blankspace
  - b) By seeing ()
  - c) Both a & b
  - d) None of the mentioned
- 2) By default, all the files are opened in \_\_\_\_\_ mode
  - a) Binary
  - b) Text
  - c) Can't say
  - d) Stream
- 3) It is not possible to combine two or more file opening mode in open () method.
  - a) True
  - b) False
  - c) Can't Say
  - d) None of the above
- 4) Which of the following is not a file opening mode \_\_\_\_\_
  - a) ios::ate
  - b) ios::nocreate
  - c) ios::noreplace
  - d) ios::truncate
- 5) \_\_\_\_\_ is return type of is\_open() function.
  - a) int
  - b) bool
  - c) float
  - d) .char \*
- 6) If we have object from fstream class, then what is the default mode of opening the file?
  - a) ios::in|ios::out
  - b) ios::in|ios::out|ios::trunk
  - c) ios::in|ios::trunk
  - d) Default mode depends on compiler
- 7) To create an output stream, we must declare the stream to be of class \_\_\_\_\_
  - a) ofstream
  - b) ifstream
  - c) iostream
  - d) None of these
- 8) Streams that will be performing both input and output operations must be declared as class \_\_\_\_\_.
  - a) iostream
  - b) fstream
  - c) stdstream
  - d) Stdiostream
- 9) To perform File I/O operations, we must use \_\_\_\_\_ header file.
  - a) < ifstream >
  - b) < of stream >
  - c) < fstream >
  - d) Any of these
- 10) Which of the following is not used to seek a file pointer?
  - a) ios::cur
  - b) ios::set
  - c) ios::end
  - d) ios::beg
- 11) Which stream class is to only write on files ?
  - a) ofstream
  - b) ifstream
  - c) fstream
  - d) iostream

- 12) It is not possible to combine two or more file opening mode in open () method.
- a) TRUE
  - b) **FALSE**
  - c) May Be
  - d) Can't Say
- 13) Which of these is the correct statement about eof() ?
- a) Returns true if a file open for reading has reached the next character.
  - b) Returns true if a file open for reading has reached the next word.
  - c) **Returns true if a file open for reading has reached the end.**
  - d) Returns true if a file open for reading has reached the middle.
- 14) Which of the following true about FILE \*fp
- a) **FILE is a structure and fp is a pointer to the structure of FILE type**
  - b) FILE is a buffered stream
  - c) FILE is a keyword in C for representing files and fp is a variable of FILE type
  - d) FILE is a stream
- 15) Which of the following methods can be used to open a file in file handling?
- a) Using Open ( )
  - b) Constructor method
  - c) Destructor method
  - d) **Both A and B**
- 16) Which operator is used to insert the data into file?
- a) >>
  - b) <<
  - c) <
  - d) None of the above
- 17) Which is correct syntax?
- a) myfile:open ("example.bin", ios::out);
  - b) **myfile.open ("example.bin", ios::out);**
  - c) myfile::open ("example.bin", ios::out);
  - d) myfile.open ("example.bin", ios:out);
- 18) Ios::trunc is used for?
- a) If the file is opened for output operations and it already existed, no action is taken.
  - b) If the file is opened for output operations and it already existed, then a new copy is created.
  - c) **If the file is opened for output operations and it already existed, its previous content is deleted and replaced by the new one.**
  - d) None of the above
- 18) Which member function is used to determine whether the stream object is currently associated with a file?
- a) **is\_open**
  - b) Buff
  - c) String
  - d) None of the above



- 19) getc() returns EOF when
- a) End of files is reached
  - b) When getc() fails to read a character
  - c) **Both A & B**
  - d) None of the above
- 20) If we have object from ofstream class, then default mode of opening the file is \_\_\_\_\_
- a) ios::in
  - b) ios::out
  - c) ios::in|ios::trunk
  - d) **ios::out|ios::trunk**
- 21) Which is correct syntax for, position n bytes back from end of fileObject ?
- a) FileObject.seekg(ios::end, n);
  - b) FileObject.seekg(n, ios::end );
  - c) **FileObject.seekg(n, ios::end );**
  - d) FileObject.seekg(ios::end, n);
- 22) When fopen() is not able to open a file, it returns
- a) EOF
  - b) **Null**
  - c) Runtime error
  - d) Compiler dependent
- 23) By default, all the files are opened in which of the following mode?
- a) Binary Mode
  - b) **Text Mode**
  - c) Sequential Mode
  - d) Both A and B
- 25) How many objects are used for input and output to a string?
- a) 1
  - b) 2
  - c) **3**
  - d) 4
- 26) Calling the stream's member function sync() causes an immediate synchronization.
- a) **Yes**
  - b) NO
  - c) May Be
  - d) Can't Say