

352  
BCA 2068/02/23 NEW POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2021  
Programme: BCA Full Marks: 100  
Course: Object Oriented Programming in C++ Pass Marks: 45  
Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Why Object Oriented Programming is more useful than Procedural Programming? Explain Major features of OOP. 7
- b) Define class and object. Explain scope of Public, Private and Protected class member with example. 8
2. a) Define constructor overloading. Why do you need constructor and destructor in a program? Compare and Contrast between parameterized and copy constructor with examples. 8
- b) Create a class student with data member stname, stid, staddress. Create another class Captain with data member house and color code. Inherit student class to captain. Use getdata() in every class as member function to get the required data and putdata() to show every member. 7
3. a) Why is virtual base class needed in C++? Explain the invocation of base class constructor in multiple inheritance with a suitable program. 8
- b) What do you mean by operator overloading? Write a program to add two complex numbers by overloading '+' operator. 7
4. a) What is polymorphism? How it is achieved at compile time and run time? 8
- b) What is the significance of a pointer in C++? How parameters in function can be passed by using reference and pointer variables? Explain with a program. 7
5. a) Differentiate between Virtual and Pure Virtual Function with Proper Example. 7
- b) Exception handling is important in OOP. Elaborate this? Write a program using exception handling constructs (try, catch, throw) to handle the multiple exceptions. 8
6. a) Why do you need generic function? Create a template class to find sum of array of integers and array of floating numbers. 8

- b) Why we need friend function and member function? How a function can be friendly to two classes? Explain it with suitable example. 7
7. Write short notes on any two: 2×5
- a) Overriding member functions
  - b) This Pointer
  - c) Late Binding

## POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2021

Programme: BCA

Full Marks: 100

Course: Object Oriented Programming in C++

Pass Marks: 45

Time : 3hrs.

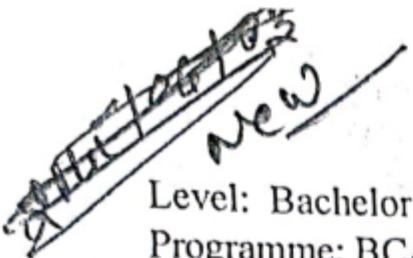
*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) How Object oriented Programming is best suited to solve the real life problem? Explain any five features of OOP. 3+5
- b) What is the significance of access species in C++? Explain constructor and destructor and show the working mechanism of constructor and destructor with example. 7
2. a) What is friend function and what are its properties? WAP to SWAP two data members of two different classes using friend function. 8
- b) Why is a static data member needed in C++ class? Explain with example. 7
3. a) Create a class COLLEGE with data members NAME, ADDRESS and MAIL-ID. Create another class FACULTY with data members ENGINEERING, MANAGEMENT and HUMANITIES. Create another class DEPARTMENTS with data members BBA, BCA and BCE. Inherit COLLEGE class to FACULTY and DEPARTMENTS class. Use GETDATA() in every class as member function to get required data and PUTDATA() to show every data members. 8
- b) What is member function overriding? How base class constructors are called when object of derived class is created in single inheritance? Explain with suitable C++ program. 7
4. a) Write the rules for operator overloading? Write a program in C++ to overload (++) operator. 7
- b) What is type conversion in C++? Write a program that illustrates the conversion between objects of two different classes. 8
5. a) What do you mean by Dynamic Memory Allocation? Explain how dynamic objectives are created and destroyed using new and delete operators. 7
- b) What is polymorphism? Explain how you implement run-time polymorphism in C++ with example. 8
6. a) Why exception handling is needed? Write a program using exception handling constructs (try, catch, throw) to handle the multiple 7

- exceptions in C++ program.
- b) What is generic programming? Create a template class to find sum of array of integers and array of floating point numbers. 8
7. Write short notes on any two: 2×5
- a) This pointer
  - b) Ambiguity in inheritance
  - c) Error and exception



POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2020  
Programme: BCA Full Marks: 100  
Course: Object Oriented Programming in C++ Pass Marks: 45  
Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

- |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 1.                                                                                                                                                                                                                                                                                               | a) What are the limitation of Procedural Language? Explain any five striking features of OOP.                                                                                                                      | 8 |
| b) Explain scope of public, private and protected members. Explain different types of constructor with a common example.                                                                                                                                                                         | 7                                                                                                                                                                                                                  |   |
| 2.                                                                                                                                                                                                                                                                                               | a) What do you mean by inline function? Write a program to illustrate the use of destructor in C++.                                                                                                                | 8 |
| b) What is friend function? Write a program to add private data of two different classes using friend function.                                                                                                                                                                                  | 7                                                                                                                                                                                                                  |   |
| 3.                                                                                                                                                                                                                                                                                               | a) Write a program to create a derived class <i>Manager</i> from two base classes <i>Person</i> and <i>Employee</i> . Assume suitable data members and member functions in each class and display the information. | 7 |
| b) What do you mean by overriding member function? Explain with an example, how function overriding can be solved in inheritance.                                                                                                                                                                | 8                                                                                                                                                                                                                  |   |
| 4.                                                                                                                                                                                                                                                                                               | a) What do you mean by data type conversion? Explain the conversion from basic type to class type with example.                                                                                                    | 7 |
| b) Explain how dynamic objects are created and destroyed using <b>new</b> and <b>delete</b> operators with suitable example.                                                                                                                                                                     | 8                                                                                                                                                                                                                  |   |
| 5.                                                                                                                                                                                                                                                                                               | a) Differentiate between function overloading and function overriding. Explain compile time polymorphism with example.                                                                                             | 7 |
| b) Write a program having <i>Polygon</i> as an abstract class with <i>length</i> and <i>height</i> as its data members. Create derived class <i>Rectangle</i> and <i>Triangle</i> . Make <i>Area ()</i> as pure virtual function and redefine it in derived classs to calculate respective area. | 8                                                                                                                                                                                                                  |   |

6. a) What do you mean by exception handling? Explain how you handle exception with a suitable example. 7
- b) Explain with example. How you overload template functions. 8  
Can we overload template function with ordinary function?  
Explain.
7. Write short notes on any two: 2×5
- a) Destructors
  - b) This pointer
  - c) Abstract class

# POKHARA UNIVERSITY

Level: Bachelor

Semester: Spring

Year : 2019

Programme: BCA

Full Marks: 100

Course: Object Oriented Programming in C++

Pass Marks: 45

Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Differentiate between Procedural oriented and Object-oriented Programming. Explain different OO concepts. 7  
b) What do you mean by friend function? Write a program to add private data of two different classes using friend function. 8
2. a) Define constructor and destructor. Explain the constructor overloading with an example. 8  
b) Write down the differences between function overloading and overriding with proper examples. 7
3. a) Write a C++ program to create a class "Furniture" which reads and displays Furniture related information. Create another class "Chair" which is derived from the "Furniture" class, it reads and displays Chair related information. Create another "Table" which is also derived from the "Furniture" class and this class reads and displays information related to "Tables". Read Chair and Table class information and display those information. 8  
b) What do you mean by operator overloading? Write a program to overload unary minus operator in C++. 7
4. a) Write a program with class which has hours and minutes as data members. Use conversion routine to convert data of class to seconds. 8  
b) What do mean by dynamic memory allocation and de-allocation? Explain, how to allocate and de-allocate memory at run time. 7
5. a) What is static binding? How do you achieve static and dynamic binding? Explain with examples. 7  
b) Explain the need of virtual function. Write a program to implement run time polymorphism in C++. 8

6. a) What do you mean by exception? Why is it necessary to handle exception? Explain with example. 8
- b) Define template. Explain template function overloading with example. 7
7. Write short notes on any two: 2x5
- a) Multi level Inheritance
  - b) Static data member
  - c) ClassTemplate

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2019  
Programme: BCA Full Marks: 100  
Course: Object Oriented Programming in C++ Pass Marks: 45  
Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

- |    |    |                                                                                                                                                                                                                          |   |
|----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 1. | a) | How is OOP language better than POP language? Write down the major features supported by OOP language.                                                                                                                   | 7 |
|    | b) | Define class and object? Explain different access modifiers with suitable examples.                                                                                                                                      | 8 |
| 2. | a) | Write the difference between constructor and destructor in C++? Can there be more than one destructor in same class? If no, why?                                                                                         | 8 |
|    | b) | Create a class <b>time</b> with the data members hour, minute and second. Use appropriate member function to input data, add two time objects and return new time object and display the time in <b>hh:mm:ss</b> format. | 7 |
| 3. | a) | How multiple can be dangerous? Explain it with suitable example.                                                                                                                                                         | 8 |
|    | b) | Write the difference between function overloading and function overriding with suitable example.                                                                                                                         | 7 |
| 4. | a) | Write a program to declare a class <b>Customer</b> which reads and display customer information like as Cid, Cname, Caddress, Cphone. To input and display 50 customers information by using pointer an object array.    | 7 |
|    | b) | Write a program to input two string and check both strings are identical or not by using comparison operator ( <b>=</b> ) overloading.                                                                                   | 8 |
| 5. | a) | Define pure virtual function. Write down the differences between pure virtual function and normal function.                                                                                                              | 7 |
|    | b) | What is a run time error? How to trace a run time error? Explain with an example.                                                                                                                                        | 8 |
| 6. | a) | Write a program to input 10 numbers into an array and sort them by using template function.                                                                                                                              | 8 |
|    | b) | Write the uses of <b>this</b> pointer with suitable example.                                                                                                                                                             | 7 |

7. Write short notes on any two:

2×5

- a) Basic to Class Type Conversion
- b) Friend function
- c) Order of constructor execution inheritance

# POKHARA UNIVERSITY

Level: Bachelor  
Programme: BCA  
Course: Object Oriented Programming in C++

Semester: Spring

Year : 2018  
Full Marks: 100  
Pass Marks: 45  
Time : 3 hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Why do you need Object-Oriented Programming? Explain any five features of OOP. 8
- b) What is the difference between class and object? Explain different access specifiers with suitable examples. 7
2. a) Why do you need constructor and destructor in a program? Explain different types of constructor with examples. 8
- b) Create a class **complex** with two data types (real, imag). Provide the method of adding and multiplying two complex numbers passed as arguments to those functions and returning the new complex number. 7
3. a) What do you mean by inheritance? What are the different types of inheritance? Explain in brief. 8
- b) Create a class **EMPLOYEE** with data members NAME, IDNUM, ADDRESS. Create another class **MANAGER** with data members TITLE and SALARY. Create another class **AUTHOR** with data members BOOK\_NAME and PRICE. Inherit **EMPLOYEE** class to **MANAGER** and **AUTHOR** class. Use GETDATA( ) in every class as member function to get the required data and PUTDATA( ) to show every data members. 7
4. a) What do you mean by data type conversion? Explain the conversion from basic type to class type. 8
- b) Create a class **String** and overload the operator + to concatenate two strings using the statement  $s3=s1+s2$ , where  $s1$ ,  $s2$ ,  $s3$  are objects of type **String**. 7
5. a) Explain how dynamic objects are created and destroyed using **new** and **delete** operators. 8

- b) What is polymorphism? Explain different types of polymorphism you studied in c++ with example. 7
6. a) What are the advantages of generic programming? Explain using a function template with an example. 8
- b) What do you mean by exception handling? Explain the meaning of throwing an exception, try block and catch block with a suitable example. 7
7. Write short notes on any two: 2×5
- a) Static data member
  - b) This pointer
  - c) Friend function

## POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2018

Programme: BCA

Full Marks: 100

Course: Object Oriented Programming

Pass Marks: 45

Time: 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*



1. a) What is object oriented programming? Explain the salient features of OPP. 7  
b) What are ways to access outside a class's of private members? Explain With an example. 8
2. a) What are constructor and destructor? Write a simple object oriented program using constructor. 8  
b) What is friend function? How a function can be friendly to two classes? Explain it with suitable example. 7
3. a) What do you mean by virtual base class and explain its application with suitable example. 7  
b) What do you mean by function overriding? Explain with an example how the member functions of base class can be called when a derived class overrides them. 8
4. a) What do you mean by operator overloading? Create a program to add two complex numbers using operator overloading 7  
b) What are the advantages of operator over loading? Explain the '+' and '-' binary operator overloading with an example. 8
5. a) What do you mean by dynamic memory allocation? How do you achieve this in C++? Give an example. 8  
b) What is virtual function? How does it provide run-time polymorphism? Explain. 7
6. a) What is exception handing? Show the use of try, throw and catch statement in handling the "divide by zero exception." 8  
b) Create a template class to find the sum of array of integers and 7

array of floating point numbers.

7. Write short notes on any two:

2×5

- a) Visibility Mode.
- b) Pointers and Arrays
- c) Polymorphism

# POKHARA UNIVERSITY

Level: Bachelor                      Semester – Fall                      Year : 2017  
Programme: BCA                      Full Marks: 100  
Course: Object Oriented Programming C++                      Pass Marks: 45  
                                            Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Why do you need Object-Oriented Programming? Explain any five striking features of OOP . 3-  
b) What is the difference between class and object? Explain different access modifiers with suitable examples. 2-
2. a) Write the difference between constructor and destructor? Explain different types of constructor with examples. 3-  
b) Create a class **time** with required data members and member function to display the time format in HH:MM:SS after adding two time objects given by user and return new time object. 3-
3. a) What do you mean by inheritance? What are the different types of inheritance, explain. 3-  
b) Create a class **EMPLOYEE** with data members **NAME**, **IDNUM**, **ADDRESS**. Create another class **MANAGER** with data members **TITLE** and **SALARY**. Create another class **AUTHOR** with data members **BOOK\_NAME** and **PRICE**. Inherit **EMPLOYEE** class to **MANAGER** and **AUTHOR** class. Use **GETDATA( )** in every class as member function to get the required data and **PUTDATA( )** to show every data members. 3-
4. a) What do you mean by data type conversion? Explain the conversion from class type to basic type. 3-  
b) Create a class **distance** and overload the operator < to compare two distance object. 2-
5. a) Explain how dynamic objects are created and destroyed using **new** and **delete** operators. 2-  
b) What is polymorphism? Explain different types of polymorphism you studied in c++ with example. 2-

6. a) What do you mean by late binding? Write example to show late binding. 3+5
- b) What do you mean by exception handling? Explain the meaning of throwing an exception, try block and catch block with a suitable example. 2+5
7. Write short notes on any two: 2x5
- a) Function overriding.
  - b) This pointer
  - c) Friend function
  - d) Template

# POKHARA UNIVERSITY

Level: Bachelor

Programme: BCA

Course: Object Oriented Programming in C++

Semester: Spring

Year: 2017

Full Marks: 100

Pass Marks: 45

Time: 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) What are the limitations of procedural oriented language? Why OOP is dominant over procedural language? 7  
b) Describe access specifier used in c++ with appropriate example. 8
2. a) What is constructor and destructor? Describe constructor overloading with possible example. 8  
b) What is advantage of using inline function? Demonstrate with example. 7
3. a) Explain types of inheritance in detail. 8  
b) What is inheritance? What is function overriding? Give Example. 7
4. a) What is operator overloading? Describe unary operator overloading with example. 8  
b) What is type casting? Explain the types of type casting used in C++. 7
5. a) Illustrate the use of the pointer with example. 7  
b) What is pure virtual function? What is the use of virtual function in C++ programming language? 8
6. a) How exception is handled in c++ ? Illustrate with example. 8  
b) What is generic function? Explain. 7
7. Write short notes on any two: 2×5
  - a) Compile time vs runtime exception handling
  - b) template function overloading
  - c) new and delete operator

# POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2016

Programme: BCA

Full Marks: 100

Course: Object Oriented Programming C++

Pass Marks: 45

Time: 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Why do you need Object-Oriented programming? Explain any five striking features of OOP. 8
- b) What is the difference between class and object? Explain different access specifies with suitable examples. 7
2. a) Explain the constructor and destructor in terms of memory allocation and de-allocation? 8
- b) Create a class Complex with two data types (real, imag). Provide the method of adding and multiplying two complex numbers passed as arguments to those functions and returning the new complex number. 7
3. a) What do you mean by inheritance? What are the different types of inheritance, explain. 8
- b) Create a class EMPLOYEE with data members NAME, IDNUM, ADDRESS. Create another class MANAGER with data members TITLE and SALARY. Create another class AUTHOR with data members BOOK\_NAME and PRICE. Inherit EMPLOYEE class to MANAGER and AUTHOR class. Use GETDATA ( ) in every class as member function to get the required data and PUTDATA ( ) to show every data members. 7
4. a) What is polymorphism? How it is achieved at compile time and run time? 8
- b) Create a class String and overload the operator + to concatenate two strings using the statement  $s3=s1+s2$ , where  $s1, s2, s3$  are objects of type String. 7
5. a) A pointer can point to an object created by a class. Explain this 7

concept with an example which involves the use of pointers to objects.

8

- b) Define pure virtual function. How does it differ from normal virtual function?
6. a) What do you mean by exception handing? Explain the meaning of throwing an exception. Try block and catch block with a suitable example. 7
- b) Define class template and function template. Give an example of class template. 8
7. Write short note on any two: 2×5
- a) This pointer
  - b) Friend function
  - c) New and Delete operator

# POKHARA UNIVERSITY

Level: Bachelor                      Semester: Fall                      Year : 2015  
Programme: BCA/BCIS                Full Marks: 100  
Course: Object Oriented Programming                Pass Marks: 45  
                                                                                    Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Why do you need Object Oriented programming? Explain any five striking features OOP. 8
- b) What is the difference between class and object? Explain different access specifiers with suitable examples. 7
2. a) What do you mean by constructor and destructor? Can a class have more than one constructor? If yes, justify your answer with an example. 7
- b) Create a class **measurement** that has separate integer data member (feet and inches). Provide two member functions. First to initialize these data members and another function to add two **measurement** objects passed as argument to this function and return new **measurement** objects. 8
3. a) What do you mean by inheritance? Explain different access specifiers in context of inheritance. 7
- b) Create a class **EMPLOYEE** with data members NAME, IDNUM, ADDRESS. Create another class **MANAGER** with data members TITLE and SALARY. Create another class **AUTHOR** with data members BOOK-NAME and PRICE. Inherit **EMPLOYEE** class to **MANAGER** and **AUTHOR** class. Use **GETDATA ()** in every class as member functions to get the required data and **PUTDATA ()** to show every data members. 8
4. a) What is polymorphism? How it is achieved at compile time and 7

- run time?
- b) What do you mean by operator overloading? Give an example program of binary operator overloading. 8
5. a) Explain how dynamic objects are created and destroyed using new and delete operators. 8
- b) What do you mean by "Do-Nothing" function? How do you achieve the late binding? Explain it with suitable example. 7
6. a) What do you mean by exception handling? Explain the meaning of throwing an exception, try block and catch block with a suitable example. 7
- b) Define class template and function template write a program it demonstrate function template. 8
7. Write short notes on any two: 2×5
- a) Static data member.
  - b) This pointer.
  - c) Friend function.

## POKHARA UNIVERSITY

Level: Bachelor

Semester – Spring

Year : 2015

Programme: BCA/BCIS

Full Marks: 100

Course: Object Oriented Programming

Pass Marks: 45

Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) What do you mean by object oriented programming language? 7  
Differentiate between OOP and POP.
- b) Design a class named student with data member's registration number, marks in 5 subjects, total and percentage. Make function readdata() to take input from user, calculate() to find total and percentage, and display() to display data. 8
2. a) Describe different types of scope in C++. Explain about static data member and static member functions in a class with suitable example. 4+4  
b) What do you mean by inheritance? What are the different types of inheritance, explain. 2+5
3. a) Create a class EMPLOYEE with data members NAME, IDNUM, ADDRESS. Create another class MANAGER with data members TITLE and SALARY. Create another class AUTHOR with data members BOOK\_NAME and PRICE. Inherit EMPLOYEE class to MANAGER and AUTHOR class. Use GETDATA() in every class as member function to get the required data and PUTDATA() to show every members. 8  
b) Create a class called String and overload the operator + to concatenate two strings using the statement s3=s1+s2, where s1, s2 and s3 are objects of type String. 7
4. a) What do you mean by class to class conversion? Explain the class to class conversion with supporting example. 3+5  
b) Explain how dynamic objects are created and destroyed using new 7

5.

6.

7.

1

and delete operators.

5. a) Differentiate between early binding and late binding with suitable example. 7
- b) What do you mean exceptional error? How to handle run time errors? Explain with example. 1+3+4
6. a) Differential between virtual function and pure virtual function. Explain the rules of virtual function declaration. 7
- b) Define template. Explain the types of template with suitable example. 2+6
7. Write short notes on **any two**: 2×5
- a) Friend class
  - b) this pointer
  - c) Destructor

FORTUNE UNIVERSITY

Level: Bachelor	Semester - Fall	Year : 2014
Programme: BCA/BCIS		Full Marks: 100
Course: Object Oriented Programming		Pass Marks: 45
		Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) What is object orientation? Explain why object oriented programming is better than other programming techniques. 8
- b) Describe the different type of scope in C++. Explain about Static Data member in a class. 7
2. a) What is Constructor & Destructor? Can we overload Constructor & Destructor? Justify your answer with an example. 7
- b) Write a program using C++ language to create a class 'Bank' that stores bank related information like as Branch\_Name, Address, Phone\_Number, Assets etc. Create another class 'Employee' which is derived from 'Bank' class that read and store employees information. And to create another class 'Customer' which is derived from the 'Employee class' and this class also read and store the Customers information. You can declare the functions and variables in respective classes as per your requirement to complete the above mentioned task. 8
3. a) How is the derived class initialize the data member of the base class? Explain with syntax and example. 7
- b) What is operator overloading? Write a program to overload the arithmetic operators (+, -, \*, /). 8
4. a) Write a program using C++ language to read few customers name into a pointer array and arrange them ascending order and display. 7

**OR**

- "A base class pointer object can point to the derived class object" describe this statement.
- b) "The association of object with corresponding function at run time is known as runtime polymorphism." Support this statement with suitable example. 8
  5. a) How to create an abstract class in C++? Explain with a suitable example. 8
  - b) What is exception handling? Discuss briefly with suitable example. 7
  6. a) Write a program that uses class template to determine smaller of two data members. 8
  - b) What is inheritance? Does ambiguity occurs in multiple inheritance? If yes explain it with suitable example. 7
  7. Write short notes on *any two:* 2x5
    - a) Inline function
    - b) Data conversion
    - c) Static Binding & Dynamic Binding

Benzema

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

- |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1. | a) Explain any five key features of COP. Write in brief about the benefits of OOP over POP.                                                                                                                                                                                                                                                                                                                                                    | 3+5 |
| 2. | b) What do you understand by class and object? Explain different access Specifiers with suitable example.                                                                                                                                                                                                                                                                                                                                      | 2+5 |
| 3. | a) Create a class complex with two data types (real, imag). Provide the method of adding and multiplying two complex numbers passed as arguments to those functions and returning the new complex number.<br><br>b) Write a program to demonstrate the concept of static member Function and Static Data member.                                                                                                                               | 7   |
| 4. | a) What do you mean by inheritance? Discuss about base and derived class with a suitable example, as private derivation.<br><br>b) Create a class EMPLOYEE with data members NAME, IDNUM, ADDRESS. Create another class AUTHOR with data members BOOK_NAME and PRICE. Inherit EMPLOYEE class to MANAGER and AUTHOR class. Use constructor in every class as member function to get the required data and PUTDATA() to show every data members. | 2+6 |
| 5. | a) Define operator overloading. Write the rules to be followed for operator overloading, Explain with suitable Example.<br><br>b) Write a simple program to overload unary ++ operator.                                                                                                                                                                                                                                                        | 2+7 |
| 6. | a) What is advantage of dynamic memory allocation? Explain with suitable example.<br><br>b) What do you mean by late binding? Write example to show late binding.                                                                                                                                                                                                                                                                              | 6   |
| 7. | a) What is the advantage of exception handling? Explain in detail.<br><br>b) What do you mean by template? Write briefly about the different types of templates, with suitable example of each.<br><br>c) Write short notes on any two:<br>a) Virtual Function Vs. Pure Virtual Function<br>b) Friend Function<br>c) Virtual Base Class.                                                                                                       | 8   |