

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BEX, BCT, BEL, BGE	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Object Oriented Programming (CT 501)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What are the limitations of Procedure Oriented Programming? Explain features of C++. Write a program to multiply two complex numbers using Object Oriented Approach. [2+2+4]
2. Can we have more than one constructors in a class? If yes, explain the need for such a situation. Write a program designing a class called midpoint to find mid-point between two points by returning object from member function using this pointer. [3+5]
3. Why is namespace required? Explain how namespace is created and used in program with a suitable example. How is reference variable used for pass by reference? Explain. [1+4+3]
4. Explain how the use of default argument supports the function overloading with suitable example. Define inline function with its merits and demerits. [4+4]
5. Define operator overloading. What are the rules of operator overloading? How do you overload unary operator? Explain with example. [1+2+5]
6. What are the different forms of inheritance? Give an example for each. Write a program which contains a base class that ask the user to enter a complex number and make a derived class that adds the complex number of its own with the base. Finally make third class that is friend of derived and calculate the difference of base complex number and its own complex number. [3+5]
7. Define virtual function with suitable example. Explain how dynamic_cast and typeid operators are used to achieve RTTI. [5+3]
8. Write short notes on file access pointers and their manipulators. Write a program to make simple library management system of a college. Your program should store and retrieve the information (Book Name, Book ID, Number of books and purchase date). [3+5]
9. Briefly explain importance of function template and class template with suitable example. Write a program to create a derive class which is a template from a base class which is also a template with additional template parameters in the derived class than that of the base class. [4+4]
10. What is the advantage of having exception handling in the program? How are multiple exceptions handled? Explain about Catching all exception in exception handling mechanism. [2+3+3]

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2075 Chaitra

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BEL, BEX, BCT, BGE	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Object Oriented Programming (CT 501)

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1. What are the main features of Object Oriented Programming? Would you consider it better than structured programming? If you do, what makes it better? Write down its advantages and disadvantages. [2+3+3]
2. What do mean by constructor and destructor? Explain the necessity of copy constructor with example. Also explain order of invocation of constructor and destructor with example. [2+3+3]
3. What type of language is C++? Explain its features. [2+6]
4. What is function overloading? How is pass by reference done in C++. Explain with suitable example. [2+2+4]
5. Write syntax of operator overloading. Create a class called time that has separate int member data for hours, minutes, and seconds. One constructor should initialize this data to zero (0), and another should initialize it to fixed values. A member function should display it in 10:45:30 format. The final member function should add two objects of type time passed as arguments using operator overloading. [1+7]
6. How the function over-riding differ from function overloading? When do we face ambiguity problem in multiple inheritance? Explain. [4+4]
7. What is pure virtual function? Discuss the role of virtual functions in C++ to cause dynamic polymorphism. Show with example how it is different from the compile time polymorphism. [2+2+4]
8. What are different file access pointers? Write a program to store and retrieve the information of Client(Client_ID, Account_ID, name, address and age) in Bank management system. Also calculate the total number of clients in a bank. [2+6]
9. Explain function template? How do you use function template with multiple template types? Give example. [4+4]
10. What is exception and what is the mechanism of exception handling in C++? Write a program to illustrate the process of handling multiple exceptions. [2+6]

TRIBHUVAN UNIVERSITY
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2076 Ashwin

Exam.	Back		
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Programme	BEL, BEX, BCT, BGE	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Object Oriented Programming (CT 501)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
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1. What are benefits of object oriented programming over procedural language? Compare C++ with C. List out the features of C++. [4+3+3]
2. What is a constant function? What is its relation with constant object? Write a meaningful function that shows the use of constant object and constant function along with use of const cast operator. [2+2+6]
3. What do you understand by default arguments? How can you relate default argument function with function overloading? Write a program to find volume of different shapes using function overloading. [2+2+6]
4. What do you mean by operator overloading? Write down its syntax. Write a class that represent the distance class and overload ++ and -- operator to increment and decrement distance. [2+2+6]
5. Explain the need inheritance in programming? Explain various forms of inheritance. Write a program to create a derived class by inheriting two base classes with same function names. Your program should be complete and meaningful. [2+2+6]
6. What is the purpose of stream manipulation? Explain different file modes that are used in opening the file. Write a program that will copy the content from one file, change the case of letters to upper case if they are in lower case and store in next file. [2+2+6]
7. What do you mean by polymorphic class? What are different RTTI mechanisms in C++? Write a program that shows the use of pure virtual function. [2+2+6]
8. Why do we need class template? Write a program to create class to represent stack data structure and use exception handling to control empty and full cases. [3+7]

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1. What are the advantages of object oriented programming over procedural programming language? Explain the features of object oriented programming. Write a simple program that illustrates the object oriented concept. [2+3+3]
2. Why do we need friend function? Explain how any member function of a class can be friend of other class with a suitable example. [2+6]
3. Explain the features of C⁺⁺. What is namespace? Explain how memory is allocated and deleted dynamically for normal variable and for array in C⁺⁺ with example program. [2+1+5]
4. Explain why default arguments are used with functions. How can a function with default argument be implemented with function overloading? Explain with example. [3+5]
5. Define operator overloading. Write operator functions as member function of a class to overload arithmetic operator '+', logical operator '<=' and stream operator '<<' to operate on the objects of user defined type time (hr, min, sec). [1+7]
6. What is Ambiguity and function Overriding? How they can be resolved? Explain each with a suitable example. [4+4]
7. What is pure virtual function and abstract class? With suitable example explain run time polymorphism. [3+5]
8. Discuss about stream class hierarchy. How a file can be open in C++. Explain with suitable example and syntax. Write a program to write the Information of 10 employee in a file. And also display their details in console. [2+2+4]
9. Explain why do we need template. Explain the function template overloading with suitable example. [3+5]
10. Explain about all Exception Handling constructs. With suitable example explain multiple exceptions handling in C++. [3+5]



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1. Why object oriented programming is necessary in Programming? With suitable example, explain the importance of object as function argument and returning object. [3+5]
2. What do you mean by constructor? Explain different types of constructors. Create a class called 'time' with data member hour, minute, second and day. Initialize all the data member using constructor. Write a program to add two time object using necessary member functions and display the result. [1+2+5]
3. Compare C and C++. Why do we need dynamic memory management? Explain the operators in C++ that enables dynamic memory management with example. [2+2+4]
4. What is Token, write its details? With example explain function overloading in object oriented programming. [3+5]
5. Explain which operators cannot be overloaded in c++? Explain how a Class type (user-defined type) of data can be converted to a basic data (inbuilt data) type? Write a program to concatenate two user given string by overloading binary plus (+) operator. [1+2+5]
6. Explain why inheritance is important in object oriented programming? With suitable example write details on member function overriding? [3+5]
7. Explain compile-time and run-time binding. Differentiate abstract base class and concrete class. Write an abstract class of your choice and use it in a program. Your program should be meaningful. [1+2+5]
8. Sequential and random access are two methods to access a data file. Which one do you prefer and why? Write a program to show opening, reading objects from file, checking end of file and closing the file. [4+4]
9. Why template is important in C++ programming? Write a program using template to add two numbers. Use the function template to pass integer, float and double. Display the returned result. [3+5]
10. How is exception handling mechanism better than traditional error handling? Explain how the exception is rethrown with a suitable program. [3+5]

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1. What are the advantages and disadvantages of object oriented programming over procedural programming? Briefly describe the features of C++. [5+5]
2. Define dynamic memory allocation. How do you use it in C++? Explain reference variable with suitable example. Write a program to swap two numbers using pass by reference concept. [1+2+3+4]
3. Define 'this' pointer with its applications. Explain the order in which constructor and destructor are invoked with suitable example. [5+5]
4. Define operator overloading. What are the rules of operator overloading? How do you overload unary operator? Explain in detail with example. [1+2+7]
5. What is function over-riding? How scope resolution is used with over ridden function? Explain the need of virtual base class with suitable example. [2+3+5]
6. Write short notes on the access pointer and their manipulators. Write a program to make simple library management system of a college. Your program should store and retrieve the information (Book Name, Book ID, Number of books and purchase date). [4+6]
7. Explain the need of virtual function with suitable example. Define runtime type information (RTTI). How dynamic cast and typeid operators are used to achieve RTTI? [4+2+4]
8. Explain how default arguments are used with class template with example. How do you throw only specified exception from a function? Exemplify. [5+5]

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1. What are the advantages of object oriented programming over procedural programming? Describe the characteristics of OOP. [4+6]
2. Explain how the use of default argument supports the function overloading with suitable example. Define namespace with its significance. [5+5]
3. Explain the relation between constant object and constant function with example. When do we use static data member and static function in a class? Exemplify. [5+5]
4. How do you convert user-defined data type to a basic data type? Write a program to overload the relational operators to compare the length (in meter and centimeter) of two objects. [4+6]
5. How the function over-riding differ from function overloading? Explain. Write a program to show the order of constructor invocation in multilevel inheritance. [5+5]
6. Explain abstract class with example. Explain how dynamic cast and typeid operators are used to achieve RTTI. [5+5]
7. What are different ios functions used in stream I/O? How they are different from manipulators? Write a program to store and retrieve the information of patient (Patient_ID, name, address, age and type) in hospital management system. [3+2+5]
8. How do you use class template with multiple template type? How the exception is re-thrown during exception handling? [5+5]

Examination Control Division

2072 Chaitra

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Subject: - Object Oriented Programming (CT501)

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1. Explain main characteristics of Object Oriented Programming. Write a program to find the transpose of given Matrix using the concept of Object Oriented Programming. [5+5]
2. Define constructor. Why constructor is needed for a class? Explain about different types of constructor with a suitable program. [1+2+7]
3. Write down the significance of reference variable with suitable example. Define default argument. Write a program to show the relation between default argument and function overloading. [4+2+4]
4. Why do we need operator overloading? What are the non-over loadable operators in C++? Write a program that will convert object from a class Rectangle to object of a class Polar using Casting Operator. [2+2+6]
5. Explain the need of virtual base class with suitable example. Create a derived class manager from two base classes person and employee. Assume suitable data members in each class and display the information. [5+5]
6. Explain about stream class hierarchy by highlighting the different ios flags and their usage. Write a program to make billing system of a department store. Your program should store and retrieve data to/from files. Use manipulators to display the record in proper formats. [3+7]
7. Why do you need Virtual Destructor? Explain with example. Write a program having Polygon as an abstract class with Length and Height as its data member. Create derived class Rectangle and Triangle. Make Area () as pure virtual function and redefined it in derived class to calculate respective area. [4+6]
8. Define function template and class template with respective syntax. Write a program to find the square root of given number. Check the validity of input number and raise the exception as per requirement. [5+5]

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TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Examination Control Division

2073 Shrawan

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BEL, BEX, BCT, BGE	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Object Oriented Programming (CT501)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
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1. Explain the characteristics of OOP. Write a program to create class "time" with data members hours, minute and second. Then add two "time" objects by taking object as argument and also returning object as argument. [4+6]
2. Why don't you use an object to call the Static Member Function, explain with example? Why do you need to use a reference in the argument to the copy constructor? Write a program to calculate the Perimeter of Triangle using Default and Parameterized constructors. [4+3+3]
3. When inline function may not work? What do you understand by Default Arguments? Write syntax of Default Arguments. Write a program to display N number of characters by using default arguments for both parameters. Assume that the function takes two arguments one character to be printed and other number of characters to be printed. [2+2+2+4]
4. Explain the syntax of operator overloading. Create a class named City that will have two member variables CityName (char[20]) and DistFromKtm (float). Add member functions to set and retrieve the CityName and DistFromKtm separately. Add operator overloading to find the distance between the cities (just find the difference of DistFromKtm) and sum of distance of those cities from Kathmandu. In the main function, initialise three city objects. Set the first and second city to be Pokhara and Dhangadi. Display the sum of DistFromKtm of pokhara and Dhangadi and distance between pokhara and Dhangadi. [3+7]
5. What do you mean by function overriding and how can we access every overridden function from the derived class object? Explain with example. Write a program to show the execution order of constructor and destructor in multilevel inheritance. Show your program outputs. [5+5]
6. What are the different ios class functions and flags that are used for formatted I/O operation? Write a program to read and write the information of 10 students in a file. Also modify the student information according to the given roll number. [3+7]
7. What do you mean by Class Template and Function Template? Write down the syntax of Class Template and Function Template. Write a program to read your Date of Birth and display it. Your program should throw multiple exception for day, month and other values not in range using exception class and each exception is handled by separate handler. [2+2+6]
8. Explain different manipulator available in C++. Create class student to store Name, Age and CRN of students. Write a program to write records of N numbers of students into the file. And your program should search complete information of students from file according to CRN entered by user and display it. [4+6]

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1. Explain the advantages of OOP over traditional procedure oriented programming. What are the characteristics of OOP? Write a program to perform addition of two metric distances which takes object as argument and also returns object as argument. [2+3+5]
2. What is literals and identifier? What is function overloading? Write a program to find the area of circle, rectangle and square using function overloading. [4+2+4]
3. List down the difference between constructor and destructor. Write a class that can store Department ID and Department Name with constructors to initialize its members. Write destructor member in the same class and display the message "Object goes out of the scope". Your program should be made such that it should show the order of constructor and destructor invocation. [3+7]
4. Explain how you overload relational operator using member function and non-member function. Write a program to convert currency from dollar to rupees and vice versa (assume suitable data). [4+6]
5. What do you mean by access specifier? Explain how different specifiers can be used in the inheriting features of base class members. Write syntax for each one of them and Write a program to support your explanation. [1+3+7]
6. Explain class hierarchy for console and file I/O with diagram. What are different ios class functions and flags that are used for formatted I/O operation? Write a program to read and write the information of 10 students in a file. [3+3+4]
7. What is pure virtual function? Write a program to demonstrate runtime polymorphism in C++ [4+6]
8. What is rethrowing exception? Write a program using template to add two integers, two floats and one integer and one float respectively. Display the final result in float. [9]

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1. What is data abstraction? Compare it with encapsulation in C⁺⁺. With suitable example, explain the concept of class in C⁺⁺. [2+2+6]
2. What is the advantage of C⁺⁺ over C? With suitable example explain dynamic memory allocation for object and object array. [4+6]
3. What is a default argument? What are the advantages and disadvantages of using inline function? Write a program to calculate and display the cube of integer, float and double number using function overloading (passing single argument to function). [4+3+3]
4. Write down syntax of operator overloading for various cases. Develop a program using a class to with 3×3 matrix as a data member. Overload the * operators so as multiply two matrices. [3+7]
5. What is difference between overloading and overriding? With suitable example explain hybrid inheritance. [4+6]
6. Discuss about stream class hierarchy. Write a program for transaction processing that write and read object randomly to and from a random access file so that user can add, update, delete and display the account information (accountnumber, lastname, firstname, totalbalance). [3+7]
7. Explain the reason for member function over-riding when using virtual function. Explain RTTI using dynamic cast and typeid operators with suitable example. [5+5]
8. Explain class template with suitable example. How do you handle multiple exceptions in C⁺⁺? Explain with example. [5+5]

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1. What are the benefits of object oriented programming over procedure oriented programming? Describe the features of object oriented programming. What is the task of `const` keyword? [4+4+2]
2. List the feature of C++. What are constructors, write their use and explain using an example. [4+6]
3. What is dynamic memory allocation? Write a C++ program to join two strings using dynamic constructor concept. [3+7]
4. What is the disadvantage of using operator overloading in C++? Write a program to define a Class Distance with necessary data members and functions. Then overload the relational operators to compare the two objects of Distance class. [2+8]
5. What is a protected access specifier? Write a program with three classes students, test and result by using multilevel inheritance. Assume necessary data members and functions yourself and program with input information, input data and calculate marks total and display result. [3+7]
6. List the features that are used in formatting the output. Explain each with example. [10]
7. Why do we need virtual function? Explain with suitable example. What is pure virtual function? What is the task of reinterpret cast operator? [6+2+2]
8. Explain the importance of function template with suitable example. How default arguments can be used in class template? What are the tasks of try, catch and throw block? [4+3+3]

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1. What is Object Oriented Programming? What are the drawbacks of Procedure Oriented Programming? List down the features of C++. Write a program with a class to represent distance with feet and inches members. The class should have member functions to read and display the data members and member functions to add and subtract two distances. [1+2+2+5]
2. What do you mean by namespace and what is its use? Explain about returning a variable from a function by reference with an example. Explain about function overloading with an example. [2+4+4]
3. How do you dynamically allocate objects and object arrays in C++? Explain about constant member function and constant object with an example. Write a meaningful program to illustrate the use of copy constructor and destructor. [1+4+5]
4. List the operators that cannot be overloaded in C++. Explain about explicit constructor with an example. Write a program having a class to represent money. The class should have two integer members to represent rupees and paisa. Overload + and - operators for adding and subtracting the objects. Then, overload >, <, == and != operators for comparing the objects. [1+3+6]
5. What do you understand by protected access specifier? Explain about the different forms of inheritance. Define a class named Course. Derive three classes from this class named: Mathematics, Science and Engineering. Then, derive two classes from Science named: Physics and Chemistry. Define data members and member functions as appropriate. Illustrate the concept of member function overriding and accessing overridden member from the derived class in your program. [1+3+6]
6. List any four formatting flags of ios class with their usage. Explain with an example how a non-parameterized user-defined manipulator can be defined. Write a program for managing a simple library database. The information to be stored in the database are book id, book name, borrower's id, borrower's name, issue date and due date. Your program should have features to add a record, display all the records and display a set of records corresponding to a particular borrower's id or a particular borrower's name. [1+3+6]
7. What are pure virtual function and abstract class? How is dynamic_cast used? Write a meaningful program to illustrate overloading of a function template with both a normal function and a function template. [2+3+5]
8. What are class templates? What do you understand by rethrowing an exception and catching all the exception? Define a class to represent time. It should have a member function to read time from the user and a member function to display the time. The function to read time must raise an exception if the user enters invalid values for hours, minutes or seconds. The exception thrown should contain arguments. The exception should be handled outside of the member function of the class. [1+4+5]

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1. What are the characteristics of OOP? How does the OOP differ from POP? Using object oriented technique, write a program to create a class vector that reads integer number. Perform vector addition by passing object as argument and returns the object as result. A vector is a class with array as member. [3+2+5]
2. What is the significance of using inline function? Describe with suitable example. What do you mean by default argument? How can you relate default argument with function overloading? Describe with suitable example. [4+2+4]
3. Define constructor and destructor. Write down different types of constructors with syntax. Create a class mdistance to store the values in meter and centimeter and class edistance to store values in feet and inches. Perform addition of object of mdistance and object of edistance by using friend function. [2+2+6]
4. Why do we need operator overloading? How can you overload operators using member function and non member function? Write a program to overload relational operators (==, !=, >, <, >=, <=) to compare complex numbers. [2+3+5]
5. How do different types of derivation affect the members of class? Write down the types of inheritance. What kind of problem is encountered in multipath inheritance? Write down its solution with suitable example. [2+2+2+4]
6. Write down the different techniques for formatting I/O stream with example. Explain the different errors encountered during file operation. [5+5]
7. Explain the need of virtual function with suitable example. What do you mean by run -time type information (RTTI)? How dynamic cast and typeid operators are used to achieve RTTI? [5+2+3]
8. Define class template and function template with respective syntax. What are the different exception handling techniques in C++? Explain with appropriate example. [5+2+3]

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1. Write down the limitations of procedural programming. Compare procedural and object oriented programming. Write program to find prime number in procedural and object oriented ways. [2+2+6]
2. What do you understand by friend functions and classes? Explain with example. Write a program to add members of objects of two different classes. [4+6]
3. What do you mean by namespace? Explain how namespace can be used. Write a program that uses pass by reference to change meter to centimeter using pass by reference along with the namespace. [2+2+6]
4. Explain the binary and unary operator overloading along with their syntax and example. Write a program to add two matrices by overloading the + operator. [4+6]
5. Explain the constructor and destructor invocation order in single and multiple inheritance. Also show how a parameterized base class constructor is called when derived class object are created. Write a program to create classes to represent student, teaching staffs and non-teaching staffs from the base class person. Use proper members in the classes to make your program meaningful. [4+6]
6. What do you mean by manipulators? Explain different manipulators available in C++. Write a program that stores information of a students in a file and display the file's content in descending order according to their marks obtained. [1+3+6]
7. What are virtual functions and pure virtual functions? Explain abstract class and its use. Write a program having student as an abstract class and create derived class such as Engineering, Science and Medical. Show the use of virtual functions in this program. [2+2+6]
8. What do you understand by function template? Write down the syntax and use of function template. Write a program that will find the sum and average of elements in an array using function templates. [2+2+6]

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BEL, BEX, BCT	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Object Oriented Programming (CT 501)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What is encapsulation? What are its advantages? How can encapsulation be enforced in C++? Write a program to create a class LandMeasure that reads Ropani, Ana, Paisa and Dam as data members. Write a function to pass two objects of type Land Measure and return their sum. (16 Ana = 1 Ropani, 4 Paisa = 1 Ana, 4 Dam = 1 Paisa) [1+1+2+6]

130
2. What is function overloading? Use new and delete operators to store n numbers dynamically and find their average using casting operator. What are the things we should remember while using default argument. Explain with an example. [2+5+3]

40 20
3. What do you mean by friend function and friend class? Do friends violate encapsulation? Write a program that can store Department ID and Department name with constructor. Also write destructor in the same class and show that objects are destroyed in reverse order of creation with suitable message. [2+3+5]
4. List the operators which cannot be overloaded. Why does the overloading of binary operator with member function requires only one argument? Create a class having an array as member. Overload index operator ([]) to input and display the elements in the array. [2+2+6]
5. How do you access overridden members of the base class from a member function in the derived class? What is the problem faced when using multipath inheritance and how is it solved? Explain with an example the order of constructor and destructor invocation during multiple inheritance. [2+3+5]
6. What are the primary trade offs between static and dynamic binding? What is pure virtual function? Write a function template for the function power() which has two parameters base and exp and returns base^{exp}. The type of base is the parameter to the template and exp is int. If the exp is negative, then it must be converted to its positive equivalent. For example 2^3 and 2^{-3} must both return 8. [2+2+6]

10
7. What is a file stream? Write a class student with roll, name, address, marks as member variables. Use a member function to write records of students in a binary file and another member function to read records from file. Write a program to search a specific record of student using roll number as key from user input. [2+8]

10
8. What are the advantages of Exception Handling over Conventional Error Handling mechanism? Explain the constructs for Exception Handling in C++ with an example. Write a meaningful program illustrating the use of both Exception with argument and Exception Specification for function. [3+3+4]

Exam. Level	Regular / Back		
	BE	Full Marks	80
Programme	BEL, BEX, BCT	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Object Oriented Programming

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- ✓ Attempt All questions.
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1. Compare C and C++. Write down different features of C++ with example for each. [5+5]
2. What do you understand by the static data member and member functions? Explain their use in the program. Write a program that uses static member functions and static data member. [2+2+6]
3. What do you understand by default arguments? Replace the function with default argument with function overloading. Write a program to find the area of triangle (when three sides are given) and area of rectangle using function overloading and default argument. [3+4]
4. What are the overloadable operators in C++? Write down the syntax for operator overloading in different cases. Write a program to compare the magnitude of complex numbers by overloading <, > and == operators. [2+2+6]
5. Explain different types of access specifiers used in inheritance. Explain the case of ambiguity in inheritance. Write a program that shows ambiguity in multiple inheritance. [2+2+6]
6. What do you mean by stream? Explain different stream class for file input/output. Write a program to display the output in pyramid form as follows: [2+2+6]


```

                A
                AB
                ABC
                ABCD
            
```
7. What do you mean by polymorphic class? What are different RTTI mechanisms in C++? Write a program that shows both RTTI mechanisms. [2+2+6]
8. What do you mean by templates? Write down the syntax for function template and class templates. Write a program with a class template to represent array and add member functions to find maximum, minimum and sort the generic array. [2+2+6]

+4+1]
 [1+6]

Exam. Level	Regular / Back		
	BE	Full Marks	80
Programme	BEI, BEX, BCT	Pass Marks	32
Year / Part	II / I	Time	3 hrs.

Subject: - Computer Programming II

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Differentiate procedure oriented programming and object oriented programming. Write down the advantage and disadvantage of both. Write program that illustrates object as data type. [2+3+5]
2. What is dynamic memory allocation? How do you allocate memory dynamically in C++ and C? Write a program that will allocate memory dynamically for the pointer member of a string class that points to the character array. Write a meaningful program for string manipulation. [1+3+6]
3. Why do you need a constructor? Write down different types of constructors and their usage. How can you initialize the constant members of a class? Write a program that uses its constructors to allocate memory for array member of vector object and destructor to deallocate the memory. [1+2+1+6]
4. What do you understand by data conversion and promotion rules? In how many ways can we convert data from one type to other? Write a program that converts object that represents 24 hours time to 12 hours time and vice versa. [2+2+6]
5. What do you mean by inheritance? Explain different access specifiers in context of the inheritance. Write a program to inherit a class that represents a safer array to create a class that represents vector with functions like additem, removeitem and element access options. Use proper members to make you program meaningful. [2+2+6]
6. What is a stream class? How can we perform the formatted input/output with stream class objects? Write a program to overload the stream operators to read and display objects of the time class in the format hh:mm:ss am. [1+3+6]
7. What is exception and how is it different than the traditional error handling? Write and explain the exception handling construct. Write a meaningful program that throws multiple exceptions using exception class and each exception is handled by separate handler. [2+2+6]
8. What do you mean by run time type information and namespace? What are the constructs that are available in C++ for run time type information? Write a program that will display the object type during the program run. [3+2+5]

Exam.	Regular/Back		
	Level	BE	Full Marks
Programme	BEL, BEX, BCT	Pass Marks	32
Year/Part	II/I	Time	3 hrs.

Subject: - Computer Programming II

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
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- ✓ Assume suitable data if necessary.

1. Explain different feature of object oriented programming. Compare OOP with procedural programming language. Write a program that will represent angular measurement in degree with OOP approach. The program should have conversion functions to convert to radian and gradian measurement. [2+2+6]
2. Write down the use of the keyword const and enumerations with example. Write a program to check whether a number is prime or not using object class concept. Remember to return enumerated true or false the function where you check the number. [4+6]
3. What do you understand by a static data member in a class? Explain the need of static functions in a class. Write a meaningful program to illustrate the use of static data member and static function members. [2+2+6]
4. Explain the need of operator overloading in programming. What are the overloadable operators in C++? Write down the syntax for operator overloading for binary and unary operators. Write a program to concatenate two strings by overloading + operator. [1+1+2+6]
5. Why do we need inheritance in programming? Explain the feature and syntax of inheritance. Write a program that will inherit a class whose members are increased by its member function. The derived class should override the function that increases its member in the derive class that will add increment of the derived class data member. Create other meaningful functions that suit your requirement. [2+2+6]
6. Explain the purpose of manipulators in programming? Compare the manipulators with the ios function with example. Write a program to overload stream operators to read and write the objects that represent rectangular coordinates. [2+2+6]
7. What do you understand by function template? Write down the syntax and use of function template. Write a program that will find the sum and average of elements in an array using function templates. [2+2+6]
8. When do we need exception handling in programming? Explain the exception handling mechanism in C++? Write a program that will handle exceptions for different cases. Make meaningful program that throws multiple exceptions. [2+2+6]
