

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
Sample Question

Exam.	Regular (New Course)		
Level	BE	Full Marks	60
Programme	BCT, BEI	Pass Marks	24
Year / Part	I / II	Time	3 hrs.

Subject: - Object Oriented Programming (CT 151)

- ✓ 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. In OOP, how may complexity be handled by abstraction? Give an example to illustrate. [2+2]
2. Define reference variable. Explain inline function with suitable example. Write a suitable program to show the concept of pass by reference and return by reference. [1+3+3]
3. Explain relation between constant object and constant member functions of a class. When is necessary to make static member data and member functions in a class? Explain with example. [4+5]
4. What are the rules of operator overloading? Write a program to read a height of a person in Feet and Inches and convert it into Meter using class type to class type conversion method. (1 meter= 3.28084 feet, 1 feet=12 inch.) [2+5]
5. Discuss various access specifier in case of inheritance. Imagine that a college hires lecturer. Some lecturers are paid in period basis, while others are paid in monthly basis. Create a class called lecturer that stores ID, and the name of the lecturers. From this class derive two classes part-time which adds pay_per_hr and fulltime which adds pay_per_month. Each of these three classes should have function readdata() to get its data from the user's keyword and display the data with printdata(). Write a program to create object of class fulltime and parttime and member function to read and display data. [3+4]
6. Why do we need virtual function in C++? How is typeid used to achieve RTTI? [3+2]
7. What are standard manipulators? Write a class student with roll, name, address, marks as member variables. Use a member function to write record 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+6]
8. How can you achieve the generic programming in C++? Write a function templates to calculate the average and multiplication of numbers. [2+6]
9. What is the need of exception handling in C++? Write a program to demonstrate exception handling with "catch all" block. [2+3]

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2081 Ashwin

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1. What are the benefits of object-oriented programming? Describe the feature of object-oriented programming. [2+2]
2. Define reference variable and write syntax for defining reference variable. WAP a function which calculates A where $A = P(1 + \frac{r}{100})^n$ for data p, r and n. But for some cases value of r is fix that is 50. Call this function in main. [2+5]
3. Explain friend function and with program code, how friend function can be used to make bridge between two classes? Create a class time, constructor having hour, minutes and second as arguments is used to initialize time objects. The add function that takes two class objects as arguments add them respectively then display the aggregate result. (Apply 60 seconds = 1minute, 60 minutes = 1 hour and 24 hour = 1 day). [2+3+4]
4. How is operator overloading used in case of binary operator? List down the rules of operator overloading. Create a class Length that has two data members meter and centimeter. Write a program to compare the length of two objects of this class by overloading '>' operator. Use constructor to initialize data members. [1+2+4]
5. What is IS-A relation and HAS-A relationship? What do you mean by multipath inheritance? Explain how ambiguity due to multipath inheritance could be resolved. [2+2+3]
6. What do you mean by abstract class? WAP to create two classes employee and student. Now create a class manager which is derived from two base classes employee and student and a class secretary derived from employee. Show the use of virtual destructor. [1+4]
7. Explain different types of file access. Write a program for library to store information of different books (as least 5 items) in a file and display them on console. [3+5]
8. Explain the use of default argument in template class. Write to suitable program to show the concept of function template. Explain in brief about stack in Standard Template Library. [3+3+2]
9. Discuss steps taken during exception handling. Write a program to compute square root of a number. The input value must be tested for validity. If it is negative, an exception must be raised. [2+3]
