TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
**Examination Control Division**
**2083 Baishakh**

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

***Subject:*** - Object Oriented Programming *(ENCT 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. What are the advantages of object oriented programming? Differentiate between procedural oriented programming and object oriented programming. [2+2]
2. When do we use default argument in functions? When can conflict occur when default argument and function overloading are used together? Create a C++ program to illustrate the concept of default arguments. Define a function named printMessage that takes two parameters: a message and a count. The function should print the string for count number of times. Set the default value of count to 1. [1+2+4]
3. What do you mean by a constructor? Explain with example types of constructors in C++. Create a class person with data members name, age, address and citizenship_number. Define constructor to initialize the value of the person. Assign citizenship number if the age of the person is greater than 16 otherwise assign value zero to citizenship number. Also create a function to display the values. [1+4+4]
4. Explain different ways of how binary operator overloading is performed? Using a class to model a 3×3 matrix, overload the + and- operator to add and subtract two matrices. [3+4]
5. What is the difference between private and protected access specifier? Define function overriding. Write a program with a class to represent cricketer that has data members to represent name, age and number of matches played. From this class derive two classes bowler and batsman. The bowler class should have number of wickets as data member and batsman class should have number of runs and number of centuries as data members. Implement the concept of function overriding in your program and also mention the type of inheritance involved in the program. [2+1+4]
6. Why do you need virtual destructor? Distinguish between function overloading and overriding with example. [1+4]
7. Explain how abnormal situations are handled in I/O process. Write a program that writes text to source file after reading from the user. Copy the content from source file, change the case of letters to uppercase if they are in lowercase and then store in destination file. Also, display the content of destination file too. [3+5]
8. Why are templates in C++ referred to as a form of generic programming? What are containers and iterators in STL? Briefly explain default arguments with Class Template with suitable example. [2+2+4]
9. How is explain exception handling mechanism in C++ better than tradition techniques? Write a program to read name, roll number and marks that catches multiple exceptions using exception class if roll number is negative and marks greater than full marks. Also, handle the exceptions. [2+3]

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
**Examination Control Division**
**2082 Bhadra**

| 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 *(ENCT 151)*

- ✓ *Candidates are required to give their answers in their own words as far as practicable.*
- ✓ *Attempt **All** questions.*
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1. What is the drawback of procedural programming and advantage of object-oriented programming along with suitable program code of each? [2+2]
2. What do you mean by Namespace? Why namespace feature is needed in C++? Explain with an example program. [1+2+4]
3. Explain with example how object can be passed or returned from functions. In which condition can a class be made friend? How can we make a specific member function of a class a friend function? With a complete example show the both of these cases of friend class and friend function of another class. [3+1+1+4]
4. What is an operator overloading? Write down the syntax for overloading binary operator using non-member operator function in a class. Write a program to perform addition, subtraction, multiplication and division with complex objects with real and imaginary members. [1+2+4]
5. Explain different forms of inheritance with an example for each. Create a class person with data members to identify a person and inherit it to create a class student with appropriate members. Write a complete program showing function overriding to make your program meaningful. [3+4]
6. Discuss about late binding and early binding. Write a program to create a classes Employee. Now create a class manager which is derived from employee. Show the use of virtual function with suitable data members and member functions. [2+3]
7. What are the different types of file modes used in $C^{++}$? Write a program with a class to represent an employee having data members to represent name, employee Id, age and salary. Add record of 10 employees in a file and display them in a console. Also search a specific record of an employee using employee Id as a key from the user input. [2+6]
8. Show with an example how do we eliminate code redundancy using template. Give with example. WAP to read n numbers of any types and sort them on descending order. For sorting, you can use vector member function. [4+4]
9. Explain exception along with their handling constructs. Develop a $C^{++}$ program that shows multiple exception handling scenarios. [2+3]

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
# Examination Control Division
**2082 Baishakh**

| Exam. | Back (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. Compare procedure oriented programming and object-oriented programming. Explain the basic concept of object oriented programming. [2+2]
2. When should you prefer the use of inline function? Explain with example. Explain function overloading in object-oriented programming. [3+4]
3. Write about different types constructors with respective syntaxes. In which condition can a class be made friend? WAP to create a class information to store the name and address of students. Store the information of two students and swap the values of these objects. [3+2+4]
4. What are the rules for operator overloading? Write a program to create a class "time" with data members – hour, minute and seconds and then overload post increment operator for increment in seconds. [2+5]
5. Define inheritance in OOP. Give a suitable example to show how function overriding differ from function overloading? Write a program to show constructor invocation order in multilevel inheritance. [1+3+3]
6. What is virtual function? Define pure virtual function with suitable example. [1+4]
7. How random access of data in file can be handled? Write a program to store name, roll_no, address and batch of 'n' students in a file. Also add a feature to search the student information by roll_no. [2+6]
8. "Templates in C++ enable generic programming, allowing the creation of reusable functions and classes that work with different data types within a single framework". Give example to justify the given statement. [4+4]
9. What are exceptions in a program? Write a meaningful program that can handle multiple exceptions. [1+4]

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
**Examination Control Division**
**2081 Ashwin**

| Exam. | Regular (New Course -2080 Batch) | | |
|---|---|---|---|
| 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.*
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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]

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