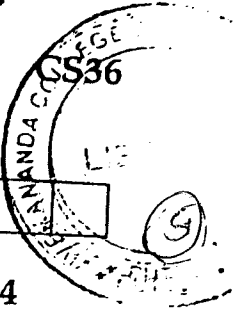


NEW SCHEME

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Page No... 1

~~Third~~ Semester B.E. Degree Examination, July/August 2004

Computer Science/Information Science and Engineering

Object Oriented Programming with C++

Time: 3 hrs.]

[Max.Marks : 100

Note: Answer any FIVE full questions.

1. (a) What is object oriented programming? Explain the following terms with example. (10 Marks)
 - i) Class and objects
 - ii) Inheritance
 - iii) Polymorphism
 - iv) Data abstraction and encapsulation.
- (b) What is reference variable? Write a C++ program to find the sum of two numbers using reference variable. (5 Marks)
- (c) Describe the new and delete operator with example. (5 Marks)
2. (a) What is inline function? List its merits and demerits. Write program to find the smallest of two numbers using inline function and the ternary operator. (6 Marks)
- (b) What is function overloading? Explain three steps of overload resolution with an example. (10 Marks)
- (c) Explain the use of scope resolution operator with an example. (4 Marks)
3. (a) What is a generic function? Write a program to create a template function for bubble sort and demonstrate the sorting of integers and characters. (10 Marks)
- (b) What are friend functions? Why is it required? Write a program using a bridge friend function for swapping two numbers. (10 Marks)
4. (a) Explain the static data members in C++ with an example. (6 Marks)
- (b) Can you :
 - i) Overload constructor
 - ii) Overload destructor.Justify your answer with an example. (10 Marks)
- (c) Write a program to count the number of objects created using constructor? (4 Marks)
5. (a) Describe operator overloading. Why is it necessary? Explain the restrictions of overloading of an operator with an example. (12 Marks)
- (b) Write a program to overload the operator += and []. (8 Marks)

Cont.:... 2

6. (a) What is inheritance? Explain different types of inheritance with suitable diagrams and syntax. (12 Marks)
- (b) Explain how constructor and destructor functions are executed with example. (8 Marks)
7. (a) What is virtual function? Demonstrate the usage of virtual functions with an example. (10 Marks)
- (b) What are iostreams in C++ ? Give a stream class hierarchy. (10 Marks)
8. (a) Write a program to add two complex numbers by overloading the operators +, >> and << with suitable messages. (10 Marks)
- (b) Write a note on :
- i) Handling of strings in C++
 - ii) Protected and public access specifier. (10 Marks)

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NEW SCHEME

USN



Third Semester B.E. Degree Examination, January/February 2004
Computer Science/Information Science and Engineering

OOP with C++

Time: 3 hrs.]

[Max.Marks : 100

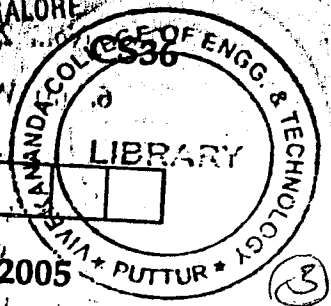
Note: Answer any FIVE full questions.

1. (a) What is Object Oriented Programming? Explain the characteristics of OOP languages. (10 Marks)
- (b) Explain :
 - i) Implicit and Explicit type conversions
 - ii) Typed names and their advantages. (6 Marks)
- (c) What is a pointer? If ia is an integer array, what is the difference between $*(ia + 1)$ and $*ia + 1$. (4 Marks)
2. (a) What is a function prototype? Why is C++ called a strongly typed language? (5 Marks)
- (b) Write the function definitions and function calls to swap the contents of two integer variables i and j using :
 - i) Value parameters ii) Pointer parameters, and iii) Reference parameters.Comment on the result when value parameters are used. (10 Marks)
- (c) Describe : i) Register automatic objects ii) Static local objects. (5 Marks)
3. (a) What is function overloading? What is its advantage? How is overload resolution done? (6 Marks)
- (b) Explain Promotions and Standard conversions with respect to argument type conversion. (8 Marks)
- (c) Write a C++ program to swap two integer, float and character type data using a generic function. (6 Marks)
4. (a) Explain the structure and definition of a class with an example. How is a class different from a structure? (6 Marks)
- (b) What are constructors? Describe the different types of constructors. (6 Marks)
- (c) Describe Friend functions and inline functions. (8 Marks)
5. (a) Why and how are static data members used? (6 Marks)
- (b) Write a note on 'this' pointer. When can this not be used? (6 Marks)
- (c) Discuss on the use of pointers to derived classes and pointers to class members. (8 Marks)

Contd.... 2

6. (a) What is the use of operator overloading? Write a C++ program to add two complex numbers by overloading the operator +. (8 Marks)
- (b) What is the difference between overloading an operator using a member function and using a friend function? What is the advantage of overloading the subscript operator `[]`? (6 Marks)
- (c) What are the advantages of inheritance? Tabulate the effect on the accessibility of members when a base class is derived using different access specifiers. (6 Marks)
7. (a) How can a member function declared in the base class be redefined in the derived class? Demonstrate this with an example. (10 Marks)
- (b) How are input and output facilities provided in C++? Write a C++ program to overload `<<` to display complex numbers. (10 Marks)
8. Write explanatory notes on : (4 × 5 = 20 Marks)
- Dynamic memory management
 - Abstract classes
 - Early and Late binding
 - File input and output

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Third Semester B.E. Degree Examination, July/August 2005
Computer Science/Information Science and Engineering

OPP with C++

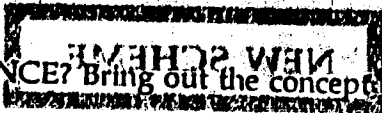
Time: 3 hrs.]

[Max.Marks : 100

Note: Answer any FIVE full questions.

- Bringout the salient features of structural programming and object oriented programming. (8 Marks)
 - Explain volatile and const qualifiers. (4 Marks)
 - How are strings handled in C++? Discuss with appropriate examples. (8 Marks)
- What is dynamic memory management? How is it handled in C++? Give examples. (8 Marks)
 - What are 'inline functions'? Explain briefly. (4 Marks)
 - What are the advantages of using functions? Explain function prototyping and function definition with example. (8 Marks)
- What is function overloading? Discuss three steps of overload resolution with examples. (8 Marks)
 - What are function templates and function instantiation? Explain. (4 Marks)
 - Write a C++ program to demonstrate function templates. Let 'minimum ()' be function. The program finds minimum of given two numbers with different data types such as integer, floating point and double. (8 Marks)
- Define 'class' and 'object'. With an example, explain the concept of data encapsulation and accessing of member elements. (8 Marks)
 - Write a note on parameterised constructor and constructor with default arguments. (4 Marks)
 - Create a class date which has dd, mm and yy, integer member variables. A constructor with three arguments to initialize it. Member functions
 - to display date in dd: mm : yy format
 - to find difference between two dates and display the total number of days.
 Also a main () to initialize two objects to two different dates and display the number of days between them. (8 Marks)
- Write a C++ program to perform arithmetic operations like add and subtract two complex numbers. Overload the operators + and -. (6 Marks)
 - Explain space saving class. (4 Marks)
 - Explain different parameter passing methods used in C++. (8 Marks)

Contd.... 2



6. (a) What is INHERITANCE? Bring out the concept of various types of inheritances. (8 Marks)
- (b) Explain virtual function. (4 Marks)
- (c) Write a note on the visibility of member functions based on private and protected derivations with an example each. (8 Marks)
7. (a) What are IO streams in C++? Give the stream class hierarchy. (8 Marks)
- (b) Explain the use of abstract classes. (4 Marks)
- (c) Write a C++ program to read a text file and display the contents, number of lines, number of words and number alphabets on the screen. (8 Marks)
8. Write short notes on :
- a) Friend function
 - b) 'this' pointer
 - c) Static members
 - d) Nested classes
- (5×4=20 Marks)

** * **

- (c) Write a C++ program using operator overloading to compare two data values representing distances in feet and inches. (6 Marks)
6. (a) What is a derived class ? Explain with examples the 3 ways in which a class can be inherited. (6 Marks)
- (b) Explain how pointers are used in base and derived classes, with examples. (6 Marks)
- (c) Explain multilevel inheritance and multiple inheritance with examples. (6 Marks)
7. (a) What are virtual functions ? Explain the usage of virtual functions with examples. (6 Marks)
- (b) Define the concept of iostreams provided in C++. Explain in detail its stream class hierarchy. (8 Marks)
- (c) What is an abstract class ? Explain with an example. (4 Marks)
8. Write short notes on : (4 x 5 = 20 Marks)
- a) Early and late binding
 - b) Hybrid inheritance
 - c) Role of protected section
 - d) Unary operator overloading

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Reg. No. 4VP03J5002

Third Semester B.E. Degree Examination, January/February 2006
Computer Science/Information Science and Engineering
Object Oriented Programming with C++

(Max.Marks : 100)

Time: 3 hrs.)

- Note: 1. Answer any FIVE full questions.
2. All questions carry equal marks.

1. (a) Define object oriented programming. Differentiate procedural structural and object-oriented programming. (6 Marks)
- (b) Explain the different characteristics of OOP. (8 Marks)
- (c) Write a program to illustrate the use of enumerated constants. (6 Marks)
2. (a) Discuss the following with an example
 - i) Function prototype
 - ii) Recursive function
 - iii) Actual and formal parameters
 - iv) Inline function (12 Marks)
- (b) Write a program to find nC_r using recursion. (8 Marks)
3. (a) Define class and object. Write a class "rectangle" containing two data items "length" and "breadth" and four functions setdata(), getdata(), display data () and area () to set the length and breadth, to get the user inputs, to display and to find the area of the rectangle respectively. Also write a main program which declares the objects and uses the member functions of the class. (10 Marks)
- (b) What do you mean by function overloading ? Explain with an example. (6 Marks)
- (c) Write a note on new and delete operators. (4 Marks)
4. (a) Write a C++ program to add and multiply two complex numbers with operator overloading. (10 Marks)
- (b) Define function templates. Discuss the need of function templates with suitable examples. (10 Marks)
5. (a) What is a "friend function" ? Write a program that has friend function to compute GCD and LCM of two numbers. (8 Marks)
- (b) Create a class STRING and implement the following :
The results are to be displayed by overloading operator after every operation. Use constructors in the program.


```
STRING s1 = "INFOSYS"
STRING s1 = "WIPRO"
STRING s3 = s1 + s2
```

 (8 Marks)

Contd.... 2

Page No... 2

CS36

- (c) Write a note on "this pointer." (4 Marks)
6. (a) Discuss the Importance of abstract classes with example. (7 Marks)
- (b) Explain the following :
- i) Object assignment
 - ii) Pointers to object
 - iii) Static member function (9 Marks)
- (c) How default argument concept is useful in C++ programming ? Justify with an example. (4 Marks)
7. (a) What is inheritance ? Discuss the different types of inheritances. (10 Marks)
- (b) What is runtime polymorphism ? How virtual functions can be used to implement the runtime polymorphism ? Explain with an example. (10 Marks)
8. Write short notes on :
- a) Volatile qualifiers
 - b) Passing by reference
 - c) Parameterised and copy constructors
 - d) Dynamic binding (20 Marks)

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NEW SCHEME

~~Third Semester~~ **B.E. Degree Examination, Dec. 06 / Jan. 07**

CS / IS

OOP with C++

Time: 3 hrs.]

[Max. Marks:100

Note: Answer any FIVE full questions.

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- 1 a. What is the essential purpose of using volatile quantifier? How it is declared? Give one example. (05 Marks)
 - b. What is the need for enumeration types? Give one example. Mention any two operations that we cannot perform with enumerator. (05 Marks)
 - c. How reference type is different when compared to pointer? (05 Marks)
 - d. What are the benefits of using typedef names? Give one example. (05 Marks)
 - 2 a. Is it possible to call functions declared in other languages? Justify your answer by taking an example. (05 Marks)
 - b. Write recursive functions to compute: i) a^b ii) $n!$ (04 Marks)
 - c. Write a C++ program to print the command line arguments for the input \$ testcommand one two Where \$ indicates the prompt of the operating system. (05 Marks)
 - d. Write a C++ program to add two complex numbers with + operator overloading. (06 Marks)
 - 3 a. What is a generic function? Write a C++ program to sort a set of integers and float numbers in ascending order using generic bubble sort. (10 Marks)
 - b. What is meant by explicit specialization? Write a C++ program to overload template specification itself taking suitable example. (10 Marks)
 - 4 a. What is a anonymous union? List any three restrictions on anonymous union. (05 Marks)
 - b. What is a friend class? With an example explain the working of friend class. (08 Marks)
 - c. What is an inline function? Mention its advantage? How are inline functions declared within a class? Give one example. (07 Marks)
 - 5 a. How can a data member be declared as a static member? What exactly is its impact? Explain with an example. (08 Marks)
 - b. How is a local class declared? What are the restrictions that apply to local class? (07 Marks)
 - c. What is a parameterized constructor? Give one example. (05 Marks)
 - 6 a. Write a C++ program to calculate the average marks scored in three subjects by students X, Y, Z. Use both initialized and uninitialised arrays of objects. (08 Marks)
 - b. Create a class FLOAT that contains two float data members. Write a C++ program to overload all the four arithmetic operators so that they operate on the objects of FLOAT. (12 Marks)
 - 7 a. What does inheritance mean in C++? When do we use the protected visibility specifier to a class member? Give one example. (08 Marks)
 - b. When do we make a virtual function pure? What are the implications of making a function pure virtual function? (07 Marks)
 - c. What is the difference between early and late binding? Explain. (05 Marks)
 - 8 a. Write a C++ program that reads a text file a.dat and creates another file b.dat that is identical except that every sequence of consecutive blank spaces is replaced by a single space. (10 Marks)
 - b. What is a stream? Why Cin and Cout are not considered as keywords? (05 Marks)
 - c. What is a scope resolution operator? Why it is required? (05 Marks)

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NEW SCHEME

**Third Semester B.E. Degree Examination, July 2006
CS / IS**

Object Oriented Programming with C++

Time: 3 hrs.]

[Max. Marks: 100

Note: Answer any Five full questions.

- 1 a. What are Reference types, The Bool type and Enumeration data types with examples and describe its usage. (08 Marks)
b. What are new and delete expression? Give examples. (08 Marks)
c. Define scope of resolution operator with an example and its related use. (04 Marks)
- 2 a. What are inline member functions and recursive functions? Give examples. (08 Marks)
b. Define scope and life time, global objects and local objects. (04 Marks)
c. Discuss the three steps involved in the function over load resolution with an illustration. (08 Marks)
- 3 a. What are the Generic functions? Explain how do you overload a function template with an example. (10 Marks)
b. Write a program to conduct a generic sort using class template. (10 Marks)
- 4 a. What is static data member and static member functions? What are its merits and demerits? Give examples. (08 Marks)
b. Bring out the differences between C++ structure and C++ class. (04 Marks)
c. Explain the concept of pointers to objects with an example. (08 Marks)
- 5 a. Discuss with examples constructors and destructors in C++. What is the order of execution? (08 Marks)
b. What are the needs and usage of friend functions? Write a program that has over loaded operator to illustrate multiplication of two matrices. (12 Marks)
- 6 a. What are the multiple and multi level inheritance illustrate with examples? (12 Marks)
b. What are virtual functions? Explain with an example its usage. (08 Marks)
- 7 a. Write a program that has a class called MATRIX. Check the two matrices by using == overloaded operator. Perform the following operations :
if (m1 == m2)
{
 m3 = m1 + m2
 m4 = m1 - m2
}
Where m1, m2, m3 and m4 are MATRIX objects. Display the result by overloaded operator <<. (14 Marks)
b. Discuss the importance of abstract classes. Give examples. (06 Marks)
- 8 Write critical notes on the following :
a. Polymorphism. b. Nested classes c. IO Streams in C++ d. 'this' pointer in C++ (20 Marks)

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06CS44

Fourth Semester B.E. Degree Examination, June / July 08
Object Oriented Programming with C++

Time: 3 hrs.

Max. Marks:100

Note : Answer any FIVE full questions.

- 1 a. Differentiate procedure oriented and object oriented programming. (04 Marks)
b. Why should default values be given to function argument in the function prototype? Explain with example. (08 Marks)
c. What is an inline function? What are the advantages of having a function inline? Write a C++ program to find cube of a number using inline function. (08 Marks)
- 2 a. Explain class objects. With the help of example explain how data hiding and encapsulation characteristics are achieved in C++. (08 Marks)
b. How do namespace help in preventing pollution of the global namespace? (04 Marks)
c. Write a C++ program to define a class called box with length, breadth and height as data members, and input (), print () and volume () as member function. (08 Marks)
- 3 a. Explain how new and delete operators manage memory allocation /deallocation dynamically. (08 Marks)
b. What is a constructor? What are its characteristics? Explain different types of constructors with examples. (12 Marks)
- 4 a. What is inheritance? With suitable examples, discuss various inheritances supported by C++. (10 Marks)
b. What is the effect of using the protected access specifier on the visibility of a base class member? (04 Marks)
c. What are the ambiguities that arise in multiple and diamond shaped inheritance? How can they be removed? (06 Marks)
- 5 a. What are virtual functions? Explain the mechanism of virtual functions. (08 Marks)
b. What is pure virtual function? What is its significance? Explain with example. (06 Marks)
c. Briefly describe the class hierarchy provided by C++ for stream handling. (06 Marks)
- 6 a. Describe the use of the following manipulators :
i) setw () ii) setiosflags () iii) setprecision () iv) setfill () v) resetiosflags (). (10 Marks)
b. What are the rules for operator overloading? Write a C++ program to overload '+' operator to concatenate two string variables. (10 Marks)
- 7 a. How does the compiler interpret the operator overloading? Write a C++ program to overload unary minus to change the sign of each of its data items of an object. (10 Marks)
b. Explain new style operators in C++. (10 Marks)
- 8 a. What is standard template library? Name some of the template classes that are available in STL. Write C++ program to swap two numbers using function template. (10 Marks)
b. What are three traditional C – style solution for handling of error generating codes. Explain briefly. (10 Marks)

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Fourth Semester B.E. Degree Examination, Dec 08 / Jan 09
Object Oriented Programming With C++

Time: 3 hrs.

Max. Marks:100

Note : Answer FIVE full questions, selecting atleast TWO questions from each Part A and Part B.

PART - A

1. a. Discuss the issues of procedure oriented programming systems with respect to data security. If object oriented programming solves it, then how? (08 Marks)
b. What are the features of reference variable? (04 Marks)
c. Why C++ introduced reference variable? Explain with example. (08 Marks)
2. a. Compare "struct" and "class" keyword of C++. (02 Marks)
b. Explain the need of friend function in C++. (06 Marks)
c. Explain the term Namespace and Namespace pollution. (04 Marks)
d. Explain with an example to illustrate the different features of keyword "Namespace" and "using". (08 Marks)
3. a. Explain the features of keyword "new" and "delete". (02 Marks)
b. Write a C++ program using "set-new-handlers" function to generate out of memory condition and also make sure that out of memory condition is resolved. (10 Marks)
c. What is the benefit of copy constructor? Explain with example to illustrate the necessity of defining our own copy constructor though default copy constructor exists. (08 Marks)
4. a. What is diamond shaped inheritance? Write a C++ program for the same. (06 Marks)
b. Explain different order of invocation of constructors and destructors in inheritance with simple example. (14 Marks)

PART - B

5. a. What is need for virtual function? Write a C++ program to override member function of base class in the derived class. (08 Marks)
b. Differentiate between virtual destructor and virtual constructor. (04 Marks)
c. List different library classes that handle streams in C++. (04 Marks)
d. Explain "Write ()" function of C++ to output the character type value to a disk file and to the display (Monitor) device. (04 Marks)
6. a. Explain error handling and manipulators in C++. (10 Marks)
b. What are the circumstances in which operator overloading becomes mandatory? (06 Marks)
c. Name any four rules for operator overloading. (04 Marks)
7. a. Write a C++ program to demonstrate the "new" and "delete" operator in overloading. (10 Marks)
b. Demonstrate the over loading of assignment operator in C++ program. (10 Marks)
8. a. Write a template for the function swap () and using the same template exchange two int variables. (08 Marks)
b. Explain any four functions of standard template library (STL). (04 Marks)
c. Write a C++ program to demonstrate the try, throw and catch keywords for implementing exception handling. (08 Marks)

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Fourth Semester B.E. Degree Examination, June-July 2009
Object Oriented Programming with C++

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting at least two from each part.

PART - A

- 1 a. Differentiate between procedure oriented and object oriented programming. (06 Marks)
- b. Why should default values be given to function arguments in function prototype and not in function definition? Write a program to add three numbers using function which has one or more default values. (09 Marks)
- c. What is data abstraction? How it is implemented in C++. Explain with an example. (05 Marks)
- 2 a. What is nested class? What is its use? Give an example and explain. (08 Marks)
- b. What are the points to remember about friend function? Write program to multiply two matrices using friend function devise a class MATRIX with a constructor, method to read and display the matrix. (12 Marks)
- 3 a. What are constructors? When they are called? What is their use? Define a suitable parameterized constructor with default values for the class TIME with data member hr, min, sec. (06 Marks)
- b. What is the draw back of static memory allocation? How it is overcome? How it is achieved in C++? Explain with an example? (06 Marks)
- c. Write program to add and multiply two complex numbers. Initialize the variables through writing constructor. Implement add and multiply operations using overloaded + and * operators. (08 Marks)
- 4 a. Explain different types of inheritance with block diagram and an example for each. (10 Marks)
- b. What are the benefits of inheritance; can a friendship be inherited? (04 Marks)
- c. What is the ambiguity that might arise in multiple inheritances. How to overcome this? Explain with an example. (06 Marks)

PART - B

- 5 a. What are virtual functions? What is their use? Give an example. How compilers resolve a call to a virtual function? (06 Marks)
- b. Describe briefly with a figure, class hierarchy provided by C++ for stream handling. (08 Marks)
- c. Explain how text O/P is achieved in C++. Give an example. (06 Marks)
- 6 a. Describe the use of following manipulators :
 i) set w () ii) set fill () iii) set precision () iv) set iosflags () v) reset iosflags (). (05 Marks)
- b. What are the rules for overloading operator? (05 Marks)
- c. Define a class DATE, use overloaded + operator to add two dates and display the result ante-date. Assume non - leap year dates. (10 Marks)
- 7 a. With syntax, explain the different methods of over loading relational operator. (06 Marks)
- b. Overload bit wise exclusive or operator (\wedge) for the class distance. The overloading function should return true if the value of either of the two objects that are passed to the operator is not equal to zero. For the rest of the cases, the function should return false. (08 Marks)
- c. With an example, explain how to overload the pointer - to - member (\rightarrow) operator. (06 Marks)
- 8 a. What are the new style casts operator. Explain the general syntax of these operators. Give one example. (04 Marks)
- b. What are class templates? What is the need for class templates? How are they created? Create a template for bubble sort function. (10 Marks)
- c. Which three key words are provided by C++ for implementing exception handling? What is the need to those class objects instead of values of fundamental types? Give example. (06 Marks)

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Fourth Semester B.E. Degree Examination, Dec.09/Jan.10

Object Oriented Programming with C++

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.**

Part – A

1.
 - a. What is cin and cout? Explain with examples. (04 Marks)
 - b. What is the function overloading? Write a program in C++ to overload the function add (S1, S2) where S1 and S2 are integers and floating point values. (10 Marks)
 - c. Explain the two different ways of defining member functions with example. (06 Marks)
2.
 - a. Explain constant member function and mutable data members with example. (06 Marks)
 - b. What are friend classes? Explain with example. (04 Marks)
 - c. Write a C++ program to define a class called TIME with hour, minute and second as data member and read (), display () and add () as member functions. (10 Marks)
3.
 - a. Explain how new and delete operators manage memory allocation and deallocation for arrays. (05 Marks)
 - b. Is overloading of constructor possible? Justify your answer with an example. (10 Marks)
 - c. How set-new-handler () function is used to handle out of memory condition. (05 Marks)
4.
 - a. What is the function over riding? Explain with a suitable example. (05 Marks)
 - b. What is inheritance? Explain the different kinds of inheritance with examples. (10 Marks)
 - c. In inheritance, explain the order of invocation of constructors and destructors with example. (05 Marks)

Part – B

5.
 - a. Explain virtual function and write a C++ program to demonstrate dynamic polymorphism. (08 Marks)
 - b. Differentiate between virtual function and pure virtual function. (04 Marks)
 - c. Explain text and binary Input/Output. (04 Marks)
 - d. With general form, explain the following functions: i) getline () ii) read (). (04 Marks)
6.
 - a. Explain the following functions:
i) seekp () ii) tellp () iii) setw () iv) setprecision (). (08 Marks)
 - b. Write a C++ program to create a class called a STACK using array of integers as data member. Implement the following operations by overloading + and -- operators:
i) S1 = S1+ element; where S1 is an object of the class STACK and element is an integer no to be push.
ii) S1 = -- S1; where S1 is an object of class STACK and -- operator pops the element.
Handle STACK EMPTY and STACK FULL conditions. Also display contents of stack, after each operation. (12 Marks)
7.
 - a. What is operator overloading? Write a C++ program to compare two values representing distances in feet and inches, using overloading the operator >. (10 Marks)
 - b. Explain how to overload subscript [] and pointer-to-member -> operator. (10 Marks)
8.
 - a. What is a class template? Explain with an example. (08 Marks)
 - b. What is exception handling? Explain try, throw and catch constructs in C++. (08 Marks)
 - c. Explain any four template class of Standard Template Library (STL). (04 Marks)

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Important Note: 1. On completing your answer, compulsorily draw diagonal cross lines on the remaining blank pages. 2. Any revealing of identity, appeal to evaluator and/or equations written eg: 3=50, will be treated as malpractice.

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Fourth Semester B.E. Degree Examination, May/June 2010
Object Oriented Programming with C++

Time: 3 hrs.

Max. Marks:100

*Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.*

PART – A

- 1 a. Explain the various features of object oriented programming. (10 Marks)
- b. Discuss function prototyping, with an example. Also write its advantages. (05 Marks)
- c. Define the 'this' pointer, with an example, indicate the steps involved in referring to members of the invoking object. (05 Marks)
- 2 a. What are friend non-member functions and friend member functions? Explain with suitable examples. (08 Marks)
- b. Write a C++ program to count the number of objects of a certain class. (06 Marks)
- c. Write a note on namespaces. (06 Marks)
- 3 a. What is dynamic memory management? Write a C++ program demonstrating the usage of new and delete operators for a single variable as well as for an array. (10 Marks)
- b. What are constructors and destructors? Explain the different types of constructors in C++, with examples. (10 Marks)
- 4 a. Discuss with examples, the implications of driving a class from an existing class by the 'public' and 'protected' access specifiers. (08 Marks)
- b. What is function overriding? Give an example. Justify the statement: "function overriding is a form of function overloading". (06 Marks)
- c. Write a C++ program to initialize base class members through a derived class constructor. (06 Marks)

PART – B

- 5 a. Define and give the syntax for the following :
i) Virtual function ; ii) Pure virtual function ; iii) Abstract base class. (06 Marks)
- b. What is a virtual table? How does it help in implementing dynamic polymorphism? Explain with an example. (08 Marks)
- c. Draw the class hierarchy for handling streams in C++. How is text input achieved in C++? (06 Marks)
- 6 a. What is a stream? What are the various flags and functions associated with error handling of streams in C++? (08 Marks)
- b. What is operator overloading? Explain with examples the circumstances under which operator overloading becomes mandatory. (12 Marks)
- 7 a. Create a class called 'distance' with data member's feet and inches and appropriate constructor (s). Overload the greater than operator (>) for the distance class to tackle the following conditions : i) $d_1 > d_2$; ii) $d_1 > \text{float}$; iii) $\text{Float} > d_1$, where d_1 and d_2 are objects of the distance class and float is a floating point value representing distance (ex : 4.5 means 4 feet 6 inches). (08 Marks)
- b. Create a class called 'string' with a data member to hold a string and a constructor to set it. Overload the subscript to set it. Overload the subscript operator for the string class to accept a character as a parameter and return the position of its first occurrence, if found, else a negative value. (06 Marks)
- c. Explain with examples, the conversion from basic type to class type and class type to basic type. (06 Marks)
- 8 a. Define a function template giving its syntax. Write a C++ program to implement array representation of a stack for integers, characters and floating point numbers using class template. (12 Marks)
- b. Explain the C++ style solution for handling exceptions. (08 Marks)

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