

IV B.Tech II Semester Regular Examinations, Apr/May 2006**OBJECT ORIENTED PROGRAMMING AND C++
(Metallurgy & Material Technology)****Time: 3 hours****Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. Explain about hybrid design methods and justify their use with suitable examples. [16]
2. (a) How do you rightly interpret the assignment operator of the form $op =$ where op could be $+$, $-$, $*$, $\%$
(b) Illustrate the significance and usage of the conditional expression $expr1 ? expr2 : expr3$ with a C program for finding the maximum of three numbers.
(c) Write a C program that reads a set of numbers and picks all odd numbers apart and all even numbers apart. [5+5+6]
3. Implement a circle class. Each object of this class will represent a circle, storing its radius and the x and y coordinates of its center as float. Include a default constructor, access functions (to accept and to print), an $area()$ function, and a $circumference()$ function. [16]
4. Implement double linked list with $create()$, $insert()$ and $print()$ operations. [16]
5. (a) Develop an object oriented programming in C++ to prepare the mark sheet of an university examination with the following items read from the keyboard:
Nameofthestudent
Rollnumber
Subjectname
Subjectcode
Internalmarks
Externalmarks
Design a base class consisting of the data members such as name of the student, roll number and subject name. The derived class consists of the data members viz., subject code, internal marks and external marks. The program must be able to build a table, list a table, insert a new entry and deleting a new entry.
(b) Explain about the ambiguity in inheritance with any specific program example. [8+8]
6. (a) What does this pointer points do? What are the application of this pointer?
(b) Explain the role of pointers in polymorphism with a necessary program example. [8+8]
7. (a) Describe briefly the features of I/O system, supported by C++?

- (b) Write a program that uses the *setf()*, *fill()* and *width()* functions to produce the following formatted output:

Chapter 10	Polymorphism222	
Chapter 11	Streams	233	
Chapter 12	Constructors	117	[8+8]

8. (a) Explain under what circumstances the following statements would be used?
- i. *throw*;
 - ii. *voidfun1(floatx)throw()*
 - iii. *catch(....)*
- (b) Write a program to demonstrate the concept of rethrowing an exception?[8+8]

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1. Explain about the concepts of object-oriented programming. [16]
2. (a) How do you rightly interpret the assignment operator of the form $op =$ where op could be $+$, $-$, $*$, $\%$
(b) Illustrate the significance and usage of the conditional expression $expr1 ? expr2 : expr3$ with a C program for finding the maximum of three numbers.
(c) Write a C program that reads a set of numbers and picks all odd numbers apart and all even numbers apart. [5+5+6]
3. (a) Implement the stack class with the member functions `count ()` and `print ()` which returns the number of items on the stack and prints the contents of the stack.
(b) Explain the difference between a public member and a private member of a class with an example. [8+8]
4. Create a string type that allows the following types of operators
(a) String concatenation using the $+$ operator
(b) String assignment using the $=$ operator
(c) String comparisons using $<$ and $>$. [5+5+6]
5. (a) What are important features of inheritance?
(b) List down the benefits of using inheritance?
(c) Write a program to class Queue which does all necessary the operations using the concept of inheritance. [4+4+8]
6. (a) What does this pointer points do? What are the application of this pointer?
(b) Explain the role of pointers in polymorphism with a necessary program example. [8+8]
7. (a) Explain how are the prefix and postfix versions of **operator++** distinguished?
(b) What operators can't be overloaded? [10+6]
8. (a) Explain under what circumstances the following statements would be used?
 - i. `throw`;
 - ii. `void fun1(float x) throw()`

iii. *catch*(... ..)

(b) Write a program to demonstrate the concept of rethrowing an exception?[8+8]

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1. Explain about hybrid design methods and justify their use with suitable examples.
[16]
2. (a) Explain the various storage classes in C?
(b) Write a C program that evaluates the product matrix, given two matrices.
[10+6]
3. Implement a Matrix class for 2-by-2 matrices: Include a default constructor, a copy constructor and an inverse $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ function. The inverse function should return the inverse of the matrix.
[16]
4. Create a string type that allows the following types of operators
 - (a) String concatenation using the + operator
 - (b) String assignment using the = operator
 - (c) String comparisons using < and >.[5+5+6]
5. (a) What are the different types of inheritance? Give an example program for each.
(b) The private member of a base class is not inheritable, Is it anyway possible for the objects of a derived class to access the private members of the base class? If yes, how? Note that the base class cannot be modified.
[6+10]
6. (a) Write a program in C++ that prints the factorial of a given number using dynamic binding.
(b) Write a program in C++ that determines whether a given number is a prime number or not and then prints the result using polymorphism.
(c) Explain the merits and demerits of the run time binding over the compile time binding.
[5+5+6]
7. (a) Why is the use of the << and >> operators called “formatted” I/O, and the use of the functions **put()**, **get()**, **read()**, **write()** etc., called “unformatted” I/O?
(b) Why is the default constructor for the *ios* class declared *private*?
(c) Why is the *ios* class made to be a *virtual* base class for the *istream* and *ostream* classes?
[5+5+6]

8. (a) Explain under what circumstances the following statements would be used?
- i. *throw*;
 - ii. *void fun1(float x) throw()*
 - iii. *catch(... ..)*
- (b) Write a program to demonstrate the concept of rethrowing an exception?[8+8]

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1. Discuss about the following, with examples.
 - (a) Classes
 - (b) Objects
 - (c) Methods [5+5+6]
2. (a) How do you rightly interpret the assignment operator of the form $op =$ where op could be $+$, $-$, $*$, $\%$
(b) Illustrate the significance and usage of the conditional expression $expr1 ? expr2 : expr3$ with a C program for finding the maximum of three numbers.
(c) Write a C program that reads a set of numbers and picks all odd numbers apart and all even numbers apart. [5+5+6]
3. (a) What is the difference between default constructor and other constructors. Explain with an example.
(b) Illustrate the difference between a constructor and a destructor with example.
(c) How and why is the scope resolution operator $::$ used in class function? Illustrate with an example. [5+6+5]
4. Implement a matrix class of size $m \times n$, to check whether the matrix is upper triangular, lower triangular or diagonal matrix for matrix type objects. [16]
5. (a) What does inheritance mean in C++? With an example explain how access specifiers for a derived class member functions with respect to a base class.
(b) What are the different modes, a derived class can be created. Explain with a necessary example. [8+8]
6. Write an example program to illustrate
 - (a) Virtual member function
 - (b) Pure virtual member function [8+8]
7. (a) What are the disadvantages of using $scanf()/printf()$ functions? Explain?
(b) Draw a line diagram showing hierarchy of various classes in the *iostream* library and explain each? [8+8]
8. (a) Explain under what circumstances the following statements would be used?

- i. *throw*;
- ii. *void fun1(float x) throw()*
- iii. *catch(... ..)*

(b) Write a program to demonstrate the concept of rethrowing an exception?[8+8]
