Based on CBSE Syllabus

S. Chand's Rapid Revision in Computer Science

(Question Bank in Computer Science)

FOR CLASS - XII

- Based on CBSE Sample Papers and Board Examination
- Questions of 1 & 2 marks each
- Questions of 3 marks each
- Questions of 5 marks each
- Board Examination Paper 2010

DHEERAJ MEHROTRA
YOGITA MEHROTRA

S. CHAND

Prepared in Accordance with the Latest Syllabus Prescribed by the Central Board of Secondary Education (CBSE) New Delhi

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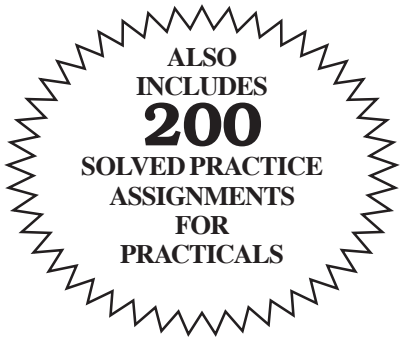
S. Chand's

RAPID REVISION IN COMPUTER SCIENCE

FOR CLASS XII

(Question Bank in Computer Science)

[*With Latest Solved Question Paper, 2010*]



DHEERAJ MEHROTRA
City Montessori School & Degree College
Kanpur Road, Lucknow (U.P.)
E-mail : dheeraj_mehrotra@hotmail.com

YOGITA MEHROTRA
Spring Dale College,
Kanpur Road, Lucknow (U.P.)
E-mail : yogita_mehrotra@hotmail.com

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First Edition 2000
Subsequent Editions and Reprints 2001, 2004, 2005, 2006, 2008, 2010
Edition 2011

ISBN : 81-219-2006-X **Code :** 20 054

PRINTED IN INDIA

By Rajendra Ravindra Printers (Pvt.) Ltd., Ram Nagar, New Delhi-110 055 and published by S. Chand & Company Ltd., 7361, Ram Nagar, New Delhi-110 055

PREFACE TO THE SECOND EDITION

The present stage of information revolution has marked a new taste of academic strature. The introduction of Computer Science, widely known as Information Technology, as a part of the curriculum has been of great success for the students.

The present book featuring Question Bank in Computer Science for Class – XII tends to activate last minute revision for the budding professionals of the field of Information Technology (IT). It deals lucidly in sample exercises alongwith the assignments in all the chapters as targetted by the Central Board for Secondary Education Examination, New Delhi.

We hope this presentation shall prove beneficial to the students by scoring high marks and gathering a perfect literacy of Information Technology.

We have pleasure in thanking Mr. Jagdish Gandhi, Mrs. Bharti Gandhi and Dr. Vineeta Kamran for the steadfast support in bringing out this publication.

It is our pleasure to invite any query at dheeraj_mehrotra@hotmail.com

Dheeraj Mehrotra
Yogita Mehrotra

SYLLABUS IN COMPUTER SCIENCE PRESCRIBED BY
THE CENTRAL BOARD OF SECONDARY EDUCATION (CBSE)
in and after 2008
Code N o. 0 8 3
(CLASS XII)

OBJECTIVES :

1. To acquire basic knowledge and learn functional aspects of Computer Science.
2. To understand the role of Computer as "Science" and "Art" in the modern world.
3. To learn problem solving techniques and develop skills for programming.
4. To acquire ability to explore and exploit this modern technology as a tool.

Unit Wise Marks and Period Distribution

S.No.	Unit	Marks	Total	No. of Periods (Theo+Prac)
1.	Programming in C++	25	110	(60 + 50)
2.	Data Structures	15	50	(30 + 20)
3.	Files and Databases	15	50	(20 + 30)
4.	Boolean Algebra	10	20	(20 + 00)
5.	Computer Networks	05	10	(10 + 00)
	TOTAL	70	240	(140 + 100)

UNIT 1 : PROGRAMMING IN C++ 110 Pds.
(Theory : 60 Pds., Practical : 50 Pds.)

REVIEW :

C++ Covered in Class XI ;

STRUCTURES :

Defining a structure, Referencing structure elements, Arrays of Structures, Passing Structure to Functions; User defined data types; Use of typedef; Enumerated Data types : Definition, Declaration, Changing default ordinal values, Symbolic constants;

CLASSES AND OBJECTS :

Class Declaration : Data Members, Member Functions, Private and Public members, default lables, data hiding and encapsulation, Arrays within a class; Class Function Definition: Members, Function definition inside the class declaration and outside the class declaration, Scope resolution operator (::), Private and Public member function, Nesting of Member functions;

Creating objects, Accessing class data members, Accessing member functions, Arrays of objects, Objects as function arguments : Pass by value;

CONSTRUCTORS AND DESTRUCTORS :

Constructors : Declaration and Definition, Default Constructors, Special Characteristics, Parameterized Constructors, Passing initial values as arguments (by implicit call and explicit call), Copy Constructors, Constructors with default arguments;

Destructors : Definition and use;

FUNCTION OVERLOADING :

Function Overloading : Declaration and Definition, Steps involved in finding best match;

INHERITANCE : EXTENDING CLASSES :

Concept of inheritance, Base Class, Derived Class, Defining derived classes, Visibility modes : Private, Public, Protected; Single Inheritance; Privately derived, Publicly derived, Making a protected member inheritable, Access control to private and protected members by member functions of a derived class, Multilevel inheritance, Nesting of classes;

POINTERS :

Dynamic memory allocation operators: new, delete; Pointers and Arrays; Array of Pointers, Pointers to one-dimensional array, Initializing Pointers; Functions returning pointers, Reference visibles and use of alias; Function call by reference, Return by reference, Pointers to structures and use, self referencial structures, Objects as function arguments: Pass by reference; Pointers to Objects; Deferencing operator *, ->; this pointer;

UNIT 2: DATA STRUCTURES 50 Pds.
(Theory : 30 Pds., Practical: 20 Pds.)

Arrays : One and two Dimensional arrays, sequential allocation, address calculation, Algorithm for one Dimensional arrays for traversal, searching (Linear and Binary Search), insertion, deletion, sorting (Insertion, Selection and Bubble sort), Merging;

Stack : Operations : PUSH and POP, Array and Linked list Implementation of Stack; Algorithms for converting expressions from INFIX to POSTFIX notation and evaluation of expression in POSTFIX notation;

Queue : Operations INSERT and DELETE in a Circular queue. Array implementation of Circular queue and linked implementation of queue;

Implementation of above concepts in C++.

UNIT 3 : FILES AND DATABASES 50 Pds.
(Theory : 20 Pds., Practical : 30 Pds.)

FILES ORGANISATION :

Basic file operations : Read, Write and Delete; Serial Files; Sequential Files - Updation, Searching; insertion, deletion;

FILE HANDLING IN C++ :

Header file : fstream.h; ifstream, ofstream; fstream, reading and writing strings to disk using getline(), get(), put() functions; Detecting end-of-file; open(), close() functions; reading and writing objects to disk using read(), write() functions;

DATABASES CONCEPTS :

Relational data model: Concepts of domain, tuple, relation, Cartesian product; Normalization; First, Second, Third normal forms;

STRUCTURED QUERY LANGUAGE :

General Concepts : Processing capabilities, Data Definition Language and Data Manipulation Language (Retrieving, Manipulating, Updating), Tables (Rows, Columns) and Fields;

SQL supported by Xbase type products, Data types: INTEGER, CHARACTER, DATE; SQL commands : CREATE TABLE, CEATE VIEW, DROP TABLE, ALTER TABLE, SELECT ALL, DISTINCT, INTO, FROM, WHERE, GROUP BY, HAVING, ORDER BY, UNION, UPDATE..., SET.... WHERE, INSERT, DELETE, SQL FUNCTIONS : AVG, COUNT, MAX, MIN, SUM;

UNIT 4 : BOOLEAN ALGEBRA 20 Pds.
(Theory : 20 Pds., Practical : 0 Pds.)

Binary-valued Quantities, Basic Postulates of Boolean Algebra, Operations AND, OR, NOT, Truth Tables;

Basic Theorems of Boolean Algebra, Principle of Duality, Idempotent Law, Commutative Law, Associative Law, Distributive Law, Absorption Law, Involution Law, DeMorgan's Law and its applications; Reducing Boolean Expression to Sum of Products and Product of Sums forms, karnaugh Map upto 4 variables;

Basic Logic Gates (NOT, AND, OR, NAND, NOR, XOR, XNOR) and their use in circuits, Application of Boolean Algebra to Half Adder, Full Adder;

UNIT 5 : COMPUTER NETWORKS 10 Pds.
(Theory : 10 Pds., Practical : 0 Pds)

Need for networking : Three stages in network development; transmitting bits across a communication medium and transmitting packets across network, providing communication services across networks;

Elementary terminology ; Nodes, Links, Connectivity, Full connectivity, Different topologies - Linear, Circular, Star, Tree, Graph; Concepts of LAN, WAN, MAN, Protocol, Internetworking, Host, Backbone Network, Repeater, Bridge, Router, Gateway, Modern; Client Server : Application Level-Remote Login (Talent), File Transfer (FTP), Electronic Mail, NFS; Internet Services : World Wide Web, Mosaic, Gopher, Usenet, Archie, WAILS.

EVALUATION SCHEME FOR PRACTICALS **30 Marks**

CLASS XII

1. PROGRAMMING IN C++ : 10 Marks
   One programming problem in C++ to be solved during the examination on computer. Marks for the program are to be given on the basis of program documentation/indentation, algorithm and result (output).
2. PROJECT WORK 8 Marks
   Project must be taken up from the real life problems.
   Marking scheme for the project :
   - Programming Style, Structured Design 3
   - Userfriendly Input/Output and on line help 2
   - Documentation 3
3. SQL COMMANDS 5 Marks
4. VIVA-VOCE 2 Marks
5. PRACTICAL RECORD FILE 5 Marks
   Record of at least 20 programs in C++ (with listing and outputs) based on programming concepts and 5 SQL based problems.

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UNIT - I

1

REVIEW OF CLASS XI

(Review of C++ programming from class XI)

SOLVED ASSIGNMENTS

Example Program : 1

// Program to input any name and print the same on the screen with appropriate messages.

```
#include<iostream.h>
main()
{
    char name[20];
    cout<<"Please enter your name"; cin>>name;
    cout<<"/n";        // used as a line feed
    cout<<"Hello, Mr."<<name<<" How are You !";
    return 0;
}
```

Example Program : 2

// Program to input any character and print the next five alphabets of the english alphabet series.

```
#include<iostream.h>
main()
{
    char a1,a2,a3,a4,a5,a6;
    cout<<"This program prints the next five alphabets ";
    cout<<"of any entered alphabet";
    cout<<"\n";
    cout<<"Please enter any alphabet (a-u)"<<endl;
    cin>>a1;
    a2 = a1+1;
    a3 = a1+2;
    a4 = a1+3;
    a5 = a1+4;
    a6 = a1+5;
    cout<<endl<<"The entered character is"<<a1<<endl;
    cout<<"The next five characters are :"<<a2;
    cout<<a3<<a4<<a5<<a6;
    return 0;
    }
```

Example Program : 3

Code a program in C++ to input any temperature value in fahrenheit and convert the same in celsius.

```
// Program to convert temperature from fahrenheit to celsius.
#include<iostream.h>
main()
    {
        float temp, temp1;
        cout << "Please enter temperature in fahrenheit";
        cout<<endl;
        cin>>temp;
        temp1 = (temp-32) * 5/9;
        cout<<endl;
        cout<<"The temperature in degree celsius is"  <<temp1;
        return 0;
    }
```

Example Program : 4

```
// Program to calculate area of the circle.
#include<iostream.h>
main()
    {
        float radius;
        const float pie = 3.14159;
        cout<< "Enter radius of circle" <<endl;
        cout>>radius;
        float area = pie * radius * radius;
        cout>>"\n";
        cout<< " The area of the circle is" <<area<<"\n";
        return 0;
    }
```

Example Program : 5

Program to depict the usage of arithmetical operators.

```
#include<iostream.h>
main()
    {
      // Program to demonstrate arithmetical operators
        int a = 10;
        int b = 5;
        cout << "The sum is " << a+b"  \n";
        cout << "The product is"  << a*b << "\n";
        cout << "The division is"  << a/b <<"\n";
        cout << "The remainder is" << a%b << "\n";
        cout << "The program ends ";
        return 0;
    }
```

Example Program : 6

Program to depict the usage of relational operators.

```
#include <iostream.h>
        // Program to depict the usage of relational operators
        main()
{
    int number;
    cout << "Please enter any number";
    cin >> number;
    cout<<"The number is equal to 15:"<<(number==15) << "\n";
    cout << "The number is less than 15:"<< (number>15) <<"\n";
    cout <<"The number is greater than 15:"<<(number<15) <<"\n";
    cout <<"The number is not equal to 15:"<<(number!=) << "\n";
}
```

Example Program : 7

Program to depict the usage of Increment Operators.

```
main()
    {
        float code,code1;
        int avg, s, s1;
        avg = 5;
        s = 5;
        s1 = s;
        code = avg * ++s;
        code1 = avg * s1++;
        cout << "code"  << code <<"\n"; \\The result of prefix
        cout << "code1"  << code1;     \\The result of postfix
        return 0;
    }
```

Example Program : 8

Program to explain the use of the Decrement operator.

```
main()
    {
        float code, code1;
        int avg, s, s1;
        avg = 5;
        s = 5;
        s1 = s;
        code = avg * – – s;
        code1 = vg * s1– – ;
        cout << " Code " << code <<" \n"; \\ is the result of prefix
        cout << " Code1" << code1;    \\ is the result of postfix
        return 0;
    }
```

Example Program : 9

// Program to compute a/b, where a and b are input variables and display the quotient and remainder.

```
#include<iostream.h>
main()
    {
```

```
        int a,b,q,r;
        cout << "Enter any two numbers" <<"\n";
        cin>>a>>b;
        q=a/b;
        r=a%b;
        cout<<"The numbers are"<<a<<" and" <<b<<"\n";
        cout<<"The quotient is" <<q;
        cout<<"\n"<<"The remainder is" <<r;
        return 0;
    }
```

Example Program : 10

Program to define the usage of a function in a program:

```
#include<iostream.h>
#include<math.h>
main()
  {
    double number1, number2;
    cout << "Please enter any number "<<endl;
    cin >> number1;
    number2 = sqrt(number1);
    cout <<"\n"<<"The square root of " <<number1<<"is "<<number1;
    return 0;
}
```

Example Program : 11

```
// Program to describethe usage of automatic type conversion
#include<iostream.h>
main()
{
int a = 10;
float sum = 1.5;
double total = a * sum;
cout << " The total is"  << total<<endl;
return 0;
}
```

Example Program :12

```
// Program to describe the concept of Explicit Type Conversion
#include<iostream.h>
main()
{
        int amount = 10000;
        amount = (long(amount)*10)/10;
        cout<<"The value of amount is" <<amount;
        return 0;
    }
```

Example Program : 13

Program to input any two numbers and print the largest.

```
#include<iostream.h>
```

```
main()
    {
        int a,b;
        cout<<"Enter any two numbers";
        cin>>a>>b;
        if (a>b)
        cout>>a>> "is greater";
        if (b>a)
        cout>>b>> "is greater";
        return 0;
    }
```

Example Program : 14

Program to input any number and check if it is greater than 10. If it is greater than 10 display its square and cube else end the program.

```
#include<iostream.h>
main()
    {
        int a;
        cout<<"Enter any number ";
            cin>>a;
            if (a>10)
                {
            cout>>a*a;
            cout>>a*a*a;
    }
        return 0;
    }
```

Example Program : 15

// Program to input name and age of any student. If the student is more than 18 years of age, display that the person is major else display the person is minor.

```
#include<iostream.h>
main()
{
   int age;
   char name[20];
   cout<<"Enter the name of the student"<<endl;
   cin>>name;
   cout<<"\n"<<"Also enter his age";
   cout<<"\n";
   cin>>age;
   cout<<"\n";
   if (age>18)
     cout<<name<<" You are major";
   else
     cout<<name<<" You are minor";
   return 0;
}
```

Example Program : 16

// Program to test the validity of any entered character if it belongs to the alphabetical set or a number.

```
#include<iostream.h>
main()
{
    char entry;
    cout <<"Enter any character for validity";
    cout<<endl;
    cin>>entry;
    if (entry>='A' && entry<='Z') || (entry>='a' && entry<='z'))
    cout>>"The character entered is a valid alphabet";
    else
    if (entry>='0' && entry<='9' )
    cout>> "The character entered is a valid number";
    else
    cout>> "Sorry, your code is invalid";
    return 0;
}
```

Example Program : 17

// Program to input any three numbers and print their sum, product and average depending on the user's choice.

```
#include<iostream.h>
main()
{
        int a,b,c,sum,mult,choice;
        float avg;
        cout<<"Enter any three numbers"<<endl;
        cin>>a>>b>>c;
        cout<<"\n";
        cout<<"\n";
        cout<<"W o r k i n g  M e n u"<<endl;
        cout<<endl;
        cout<<"Enter 1 to add"<<endl;
        cout<<"Enter 2 to multiply"<<endl;
        cout<<"Enter 3 to calculate the average"<<endl;
        cout<<"\n";
        cout<<"Enter your choice (1-3)"<<endl;
        cin>>choice;
        cout<<"\n";
        switch(choice)
            {
              case 1 :
                    sum = a + b + c;
                    cout<<"The sum of three numbers is " <<sum;
                    cout<<"\n";
                    break;
```

PRODUCT NOT FOUND!

Product not found!

continue

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