Class XII (Practicals)

Duration: 3 hours   **Total Marks:**   **30**

1. Programming in C++   **10**

One programming problem in C++ to be developed and tested in Computer during the examination. Marks are allotted on the basis of following:

Logic : 5 Marks

Documentation/Indentation : 2 Marks

Output presentation : 3 Marks

Notes: The types of problems to be given will be of application type from the following topics

• Arrays (One dimensional and two dimensional)

• Class(es) and objects

• Stack using arrays and or linked implementation

• Queue using arrays (circular) and or linked implementation

• Binary File operations (Creation, Displaying, Searching and modification)

• Text File operations (Creation, Displaying and modification)

2. SQL Commands   **05**

Five Query questions based on a particular Table/Reaction to be tested practically on Computer during the examination. The command along with the result must be written in the answer sheet.

3. Project Work   **05**

The project has to be developed in C++ language with Object Oriented Technology and also should have use of Data files. (The project is required to be developed in a group of 2-4 students)

• Presentation on the computer

• Project report (Listing, Sample, Outputs, Documentation

• Viva

4. Practical File   **05**

Must have minimum 20 programs from the following topics

• Arrays (One dimensional and two dimensional, sorting, searching, merging, deletion & insertion of elements)

• Class(es) and objects

• Stacks using arrays and linked implementation

• Queues using arrays (linear and circular) and linked implementation

• File (Binary and Text) operations (Creation, Updation, Query)

• Any computational based problems

15 SQL commands along with the output based on any table/relation:

5. Viva Voce   **05**

Viva will be asked from syllabus covered in class XII and the project developed by student.

GUIDELINES FOR PROJECTS (Class XII)

1. Preamble

1.1 The academic course in Computer Science includes one Project in each year. The Purpose behind this is to consolidate the concepts and practices imparted during the course and to serve as a record of competence.

1.2 A group of 2-3 students as team may be allowed to work on one project.

2. Project content

2.1 Project for class XII should ensure the coverage of following areas of curriculum:

a. Flow of control

b. Data Structure

c. Object Oriented Programming in C++

d. Data File Handling

Theme of the project can be

• Any subsystem of a System Software or Tool

• Any Scientific or a fairly complex algorithmic situation.

• School Management, Banking, Library information system, Hotel or Hospital management system, Transport query system

• Quizzes/Games;

• Tutor/Computer Aided Learning Systems

2.2 It is suggested to prepare a bilingual (English and other Indian language) user manual part of project file

2.3 The aim of the project is to highlight the abilities of algorithmic formulation, modular programming, optimized code preparation, systematic documentation and other associated aspects of Software Development.

CLASS XII (SESSION 2014-15)
C++ PRACTICAL LIST

1. Write a Program in C++ (telephone directory simulation) that can sort telephone number. Names to be treated as a unit. Define them inside a structure.

2. Write a program in C++ to defined and use (Read and Display object) a class named
   ADMISSION with the following description:
   Private members:
   AD_NO integer type 10-2000
   NAME Array of Characters
   CLASS Characters
   FEES float type
   Public Members:
   READ_DATA( ) To read and object of ADMISSION type
   DISPLAY( ) To display the details of object.

3. Write a program to declare and use a class Bank_ Account for 5 customers with the following data members
   Name of depositor. Account Number, Type of Account (S for saving, C for current). The class also contains member functions to do the following.
       (i) To initialize data members.
       (ii) To deposit money.
       (iii) To withdrawal money after checking balance (Minimum balance Rs.1000)
       (iv) To display the data members.

4. Define a class clothing in C++ with the following description:
       Private members:
           Code of type string
           Type of type string
           Size of type string
           Material of type string
           Price of type float

           A function Calc_ Price ( ) which calculate and assigns the value Price as
           follows:
           For the value of Material as " COTTON "
               Type Price (Rs)
               TROUSER 1500
               SHIRT 1200
           For Material other than " COTTON " the above mentioned Price gets reduced by 25%.
       Public members:
           · A constructor to assign initial values of Code, Type and material with the
           word " NOTASSIGNED " and Size and Price with 0.
           · A function Enter () to input the values of the data members code, Type, Size
           and Material and invoke the CalcPrice( ) function.
         · A function Show( ) which display the content of all the data members for a
         clothing.
       Write a program to read and write the object of the above class in a file.

5. Write a program in C++ to demonstrate the 3 types of Constructors in a Class
   class Test
   {
           int RegNo, Max, Min, Score;
           public:
                   Test();
                   Test(int reg, int sc); // assign 100 to max and min
                   Test(Test &ob);
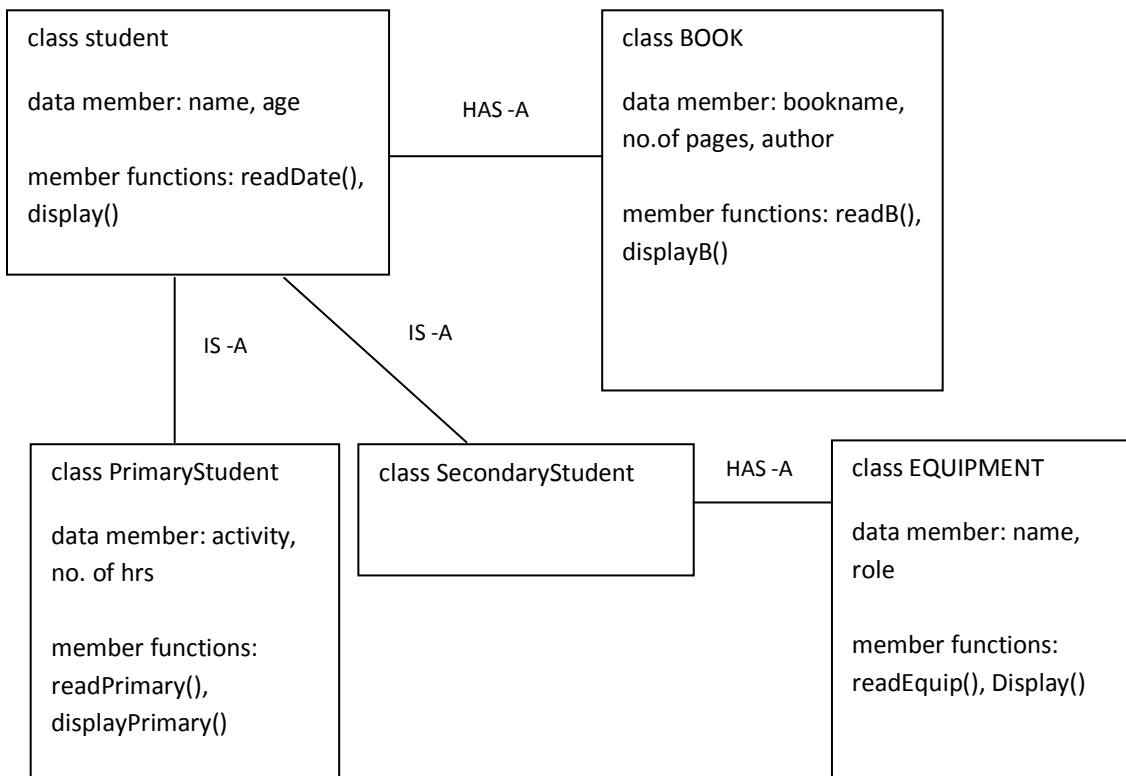   ~Test();
                   void Display();//to display all the data members
   }

6. Write a program in C++ to demonstrate the use of multilevel inheritance
   [Hint : Person -> Student -> GraduateStudent].

7. Write a program in C++ to illustrate order of constructor invocation.
           class Subject -> class Student -> class Admission

8. Create the following class hierarchy in C++.

```
+-----------------------------+          +-----------------------------+
| class student               |          | class BOOK                  |
|                             | HAS -A   |                             |
| data member: name, age      |----------| data member: bookname,      |
|                             |          | no.of pages, author         |
| member functions: readDate(),|         |                             |
| display()                   |          | member functions: readB(),  |
|                             |          | displayB()                  |
+-----------------------------+          +-----------------------------+
     |            \
   IS -A           IS -A
     |               \
+---------------------+    +-----------------------+  HAS -A  +-----------------------+
| class PrimaryStudent|    | class SecondaryStudent|----------| class EQUIPMENT       |
|                     |    |                       |          |                       |
| data member: activity,|  |                       |          | data member: name,    |
| no. of hrs          |    |                       |          | role                  |
|                     |    +-----------------------+          |                       |
| member functions:   |                                       | member functions:     |
| readPrimary(),      |                                       | readEquip(), Display()|
| displayPrimary()    |                                       |                       |
+---------------------+                                       +-----------------------+
```

9. Assuming the class EMPLOYEE given below, write and call function in C++ to perform the following :
   Write the objects of EMPLOYEE to a binary file.
   Read the objects of EMPLOYEE from binary file and display them on screen.
   class EMPLOYEE
   {
       int ENO;
       char ENAME[30];
       public: void GETIT( ) { cin>>ENO ; gets(ENAME); }
       void SHOWIT( ) { cout<<ENO <<" :: "<<ENAME<<endl; }
   };

10. Write and call a function in C++ to print the count of lines starting with "S" or "s" from a text file DIALOGUE.TXT. For example, if the content of the file DIALOGUE.TXT is
    This is his book.
    Sweet one?
    Set to put.
    And mark.
    Then output will be 2.

11. Assuming the class STOCK given below, write and call functions in C++ to perform the following :
    i) Write the object of STOCK to a binary file "stock.dat" by appending records in it.
    ii) Search a record from the file by reading it for which ITNO is given by user.
    class STOCK
    {
        int ITNO
        char ITEM[30];
        public: void GETIT( ) { cin>>ITNO ; gets(ITEM); }
        void SHOWIT( ) { cout<<ITNO <<" :: "<<ITEM<<endl; }
    };

12. Write and call a function in C++ to print the count of word "the" as independent word from a file STORY.TXT. For example, if the content of the file STORY.TXT is
    That is the full programe.
    The same is expected, it is good like the Taj.
    Then output will be 3

13. Write a program in C++ to write records in a binary file PHONE.DAT containing the records of the following structure type
    class Phonelist
    {
        char Name[20];
        char Address[30];
        char AreaCode[5];
        char PhoneNo[15];
        public:
            void Register();
            void Show();
            int CheckCode(char AC[])
            {
                return strcmp(AreaCode, AC);
            }

};
Write a function Transfer() in C++ that would copy all those records which are having AreaCode as "DEL" from PHONE.DAT to PHONEBACK.DAT.

14. Write a program in C++ to do the following in a binary file STUDENT.DAT containing the records of the following class Student type

```
class Student
{
        char Admno[10];
        char Name[20];
        float Percent;
        public:
                void EnterData();
                void DisplayData();
                float ReturnPercent();
};
```

1. Insert Record
2. Modify Record
3. Delete Record
4. Search Record
5. Exit

15. Write a Program in C++to insert data in a sorted file.

16. Write a program in C++ to read a 2-D array using pointers (i.e. Dynamic Array), calculate its row sum and column sum and display this array alongwith row sum and column sum.

17. Program to illustrate the functioning of this pointer.

```
class Salesman
{
        char name[25];
        float total_sales;
        public:
                Salesman(char *s, flat f);
                void prnobject(void);

};
```

18. Write a menu driven program in C++ to perform following operation on string without using built in functions (Use pointers).
    (i)   Find the length of the string
    (ii)   Compare two String
    (iii)   Concatenate two String.
    (iv)   Reverse of the String
    (v)   Substring of a String

19. Write and call a function in C++ which accepts an integer array and its size as arguments and replaces elements having odd values with thrice its value and elements having even values with twice its value.
    Example: if an array of five elements initially contains the elements as
    3,4,5,16,9,2 than the function should rearrange the content of the array as 9,8,15,32,27,4.

20. Write and call a function to print product of two matrixes passed to it by argument.

21. Write and call a user defined function names Upper_half( ) in C++ which takes a two dimensional array A, with size N row and N columns as argument and print the upper half of the array. For example :

If array A	4 6 5 9	the output will be	4 6 5 9
	3 4 5 6		4 5 6
	5 6 7 3		7 3
	1 2 3 4		4

22. Write and call a function in C++ to print the product of each column of a two dimensional integer array passed as the argument of the function.
    For example if the two dimensional array contains
        1 3 4
        4 6 2
        4 2 3
        Then the output should appear as :
        Product of Column 1 = 16
        Product of Column 2 = 36
        Product of Column 3 = 24

23. Write a program in C++ to demonstrate the Bubble Sort, Insertion Sort, Selection sort using function.

24. Write a program in C++ to demonstrate the Linear Search and Binary Search sort using function.

25. Write a C++ program to display implementation in a Stack using arrays.

26. Write a C++ program to display implementation in a Queue using arrays.

27. Write a C++ program to display implementation in a Circular Queue using arrays.

28. Write and call functions in C++ to insert and delete (Push and Pop) a node containing Book's information, from a dynamically allocated Stack of books implemented with the help of the following structure :
        struct Book
        {
                int BNo;
                char BName[30];
                Book *Next;
        };

29. Write a C++ program to display linked implementation of queues where each node has following structure.
struct node
    {
        char name[20];
        int age;
        node *Link;
    };
class queue
{
        node *rear, *front;
        public:
                queue(){rear = NULL; front = NULL;}

```
                void queins();
                void quedel();
                void display();
};
```

Generate the following menu and design the corresponding functions for each option
Add to queue
Delete from queue
Display queue
Exit

30. SQL:
Consider the following tables EMPLOYEES and EMPSALARY. Write SQL commands for:
Creation of the tables
Empid in EMPLOYE as primary key becomes reference key in table EMPSALARY
Insert the following records in EMPLOYEE and EMPSALARY table.
and for the statements (i) to (iv).

EMPLOYEE

EMPID	FIRSTNAME	LASTNAME	ADDRESS	CITY
010	George	Sarch	Delhi	Delhi
106	Mary	Jones	NH-2	Mumbai
163	Sam	Aleminth	VS Chopki	Delhi
215	Sark	Sengupm	Furn Street	Hornburg
244	Marks	Samour	Namstey Chowk	Calcutta
670	Robin	Zee	Check Point	Mumbai
555	Henry	Thompson	Cnt. Road	Delhi
460	Rebel	Winy	Red Road	New York
440	Peter	Samee	Fifth Cross	Paris111

EMPSALARY

EMPID	SALARY	BENEFITS	DESIGNATION
010	75000	12000	Manager
106	60000	10000	Manager
163	37000	25000	Director
215	50000	12300	Manager
670	55000	11000	Clerk
244	40000	3000	Clerk
555	20000	10000	Clerk
460	32000	7500	Salesman
440	28000	12800	Salesman

(i) To display First name, Last name, Address and City of all employees living in Paris from the table EMPLOYEES.
(ii) TO display the content of EMPLOYEES table in descending order of FIRSTNAME.
(iii) To display the first name, last name and total salary of all managers from the tables Employees and Empsalary, where total salary is calculated as Salary + Benefits.
(iv) To display the Maximum salary among managers and clerks from the table EMPSALARY.