
SAMPLE PAPER- 1 (unsolved)
Computer Science
Class – XII

Time allowed 3 hours

Maximum Marks: 70

General Instructions:

- (i) **All** questions are compulsory.
 - (ii) Programming Language : C++
 - (iii) Marks are given at the end of each question.
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1.

- (a) Explain Encapsulation with example (2)
- (b) Identify the error(s) in the following program

```
#include <iostream.h>
void main()
{
    int i=0;
    i = i + 1;
    cout << i << " ";
    /* comment/* // i = i +1;
    cout << i;
}
```

 (1)
- (c) Explain about storage classes in C++ (2)
- (d) Which of the following array declaration are invalid? Explain with reason
 - (i) float value [20];
 - (ii) int result [10]; (2)
 - (iii) float X[+30];
 - (iv) account [10] of float
- (e) Explain Function overloading with two examples (2)
- (f) Write a C++ program to find out whether the given year is a leap year or not (3)

2.

- (a) Explain Friend function with example? Why we need Friend function (2)
- (b) Explain the role of default constructor with example? (2)
- (c) A ticket selling both in a cricket stadium, people has to buy the ticket from this both to enter into the stadium. Price of the each ticket is Rs. 500. The booth keeps track of the number of people visited the stadium. Model this ticketing booth with a class called Counter A including following members
 - Data members
 - (i) Number of people visited
 - (ii) Total amount money collected (4)
 - Member functions
 - (i) To assign initial value

- (ii) To increment people total as well as amount total if a ticket is sold out.
- (iii) To display two totals

Write a program to test this class.

(d) From the following given declarations and answer the questions given below:

```
class Car
{
    int wheels;
protected:
    int driver;
public:
    void input(int,int);
    void output();
};
class vehicle : protected Car
{
    int petrol;
protected:
    int numner_of_passenger;
public:
    void getdata(int,int);
    void putdata();
};
class bus:private vehicle
{
char model[25];
public:
    void acceptdata(char);
    void display();
};
```

(4)

- a. Name the base class and derived class of the class vehicle
- b. Name the data member(s) that can be accessed from function display.
- c. Name the data member(s) that can be accessed by an object of bus class
- d. Is the number function output accessible to the objects of vehicle class.

3.

- (a) What do you understand memory leaks? What are the possible reasons for it? How does it can be avoided? (3)
- (b) Each element of an array School [20][50] requires 4 bytes of storage. Base address of School is 2000, determine the location of Scholl[10][10] when the array is stored as (i) Row Major (ii) Column major (4)
- (c) Give the algorithm for converting an infix arithmetic expression into postfix arithmetic expression. Use the algorithm for the following expression, showing in a tabular form the changing status of the stack: $Q : (A-B) * (C/D)+E$ (3)
- (d) write an algorithm to swap first and last nodes of a linked list R (2)
- (e) Explain Linear Search and Binary search (2)

- 4.
- Write a C++ program than can add new record and delete a record from the file? (3)
 - Write the advantage and disadvantage of the sequential file organization (2)
 - What type of storage medium is required to store a random access file? (1)
- 5.
- Explain different data models with examples (2)
 - Write a query on customer table whose output will exclude all customers with a rank < 50, unless they are located in Delhi (2)
 - Based on the below student table write the SQL commands for the following questions(4)

NO	Name	Course	Mark	Grade	Class
1	Kannan	Computer	80	B	12 A
2	Kumar	Commerce	89	A	12 C
3	Arun	Biology	65.5	C	12 B
4	Vivek	Commerce	92	A	11 C
5	Sudha	Biology	75	B	11 B
6	Balaji	Computer	61.5	C	11 A
7	Ravi	Commerce	78.3	B	12 C
8	Kumar	Computer	96	A	11 A

- Select all the non-biology student from the above table
 - List the name of all class 11 student in the mark order
 - To count number of student with Grade 'A'
 - To insert new student record in the above table and fill the entire column with values.
- 6.
- Prepare the table of combination for the following Boolean algebra expressions (2)
 - $\overline{X}Y + \overline{X}Y$
 - $XY\overline{Z} + \overline{X}YZ$
 - Draw the diagram of digital circuit for
 $F(a, b, c) = AB + BC + CD$ using NAND - to - NAND logic. (3)
 - According to which law of Boolean algebra following expression are true: (1)
 $X + (Y + Z) = (X + Y) + Z$ and $X(YZ) = (XY)Z$
 - Minimize the following function using a Karnaugh map: (2)
 $F(W, X, Y, Z) = \sum (0, 4, 8, 12)$
- 7.
- Write the disadvantages of star topology (1)
 - Difference between LAN and WAN (4)
 - What is FDDI? (1)
 - Name some internet services (1)
 - Name different layers in OSI reference model (1)
 - Explain repeater (1)
 - What is MOSAIC (1)