22316

Seat No.

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**

a) State any four object oriented languages.

b) Describe use of protected access specifier used in the class.

c) Differentiate between OOP and POP.

d) Write any two characteristics of destructor.

e) Describe meaning of following:

(i) ios : : in

(ii) ios : : out

Marks

f) Give output for following code:

```
class student
{
    int roll no;
    char name [14];
} s[6];
void main( )
{
    cout <<sizeof(s);
}
```

g) Write syntax to define a derived class.

2. **Attempt any THREE of the following:**   **12**

a) Write a C++ program to accept array of five elements, find and display smallest number from an array.

b) Write a C++ program to declare a class 'College' with data members as name and college code. Derive a new class 'student' from the class college with data members as sname and roll no. Accept and display details of one student with college data.

c) Write a C++ program to declare a class 'circle' with data members as radius and area. Declare a function getdata to accept radius and putdata to calculate and display area of circle.

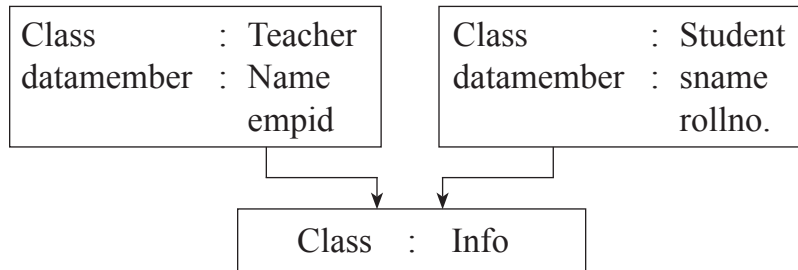d) With suitable example, describe effect of ++ and − − operators used with pointer in pointer arithmetic.

3. **Attempt any THREE of the following:**   **12**

a) Write a C++ program to declare a class addition with data members as x and y. Initialize value of x and y with constructor. Calculate addition and display it using function 'display.'

b) With suitable diagram describe structure of C++ program.

c) Describe the concept of virtual base class with suitable example.

d) Describe use of static data member in C++ with example.

Marks

4. **Attempt any THREE of the following:** **12**

a) Write a C++ program to implement inheritance shown in following figure:

| Class : Teacher
datamember : Name
empid | Class : Student
datamember : sname
rollno. |

| Class : Info |

Accept and display data of one teacher and one student using object of class 'Info'.

b) Write a C++ program to print multiplication table of 7.

(example: $7 \times 1 = 7$ ..... $7 \times 10 = 70$)

c) Write a C++ program to swap two integer numbers and swap two float numbers using function overloading.
(Hint : overload swap function)

d) Write a C++ program to count number of spaces present in contents of file.

e) Write a C++ program to find greatest number among two numbers from two different classes using friend function.
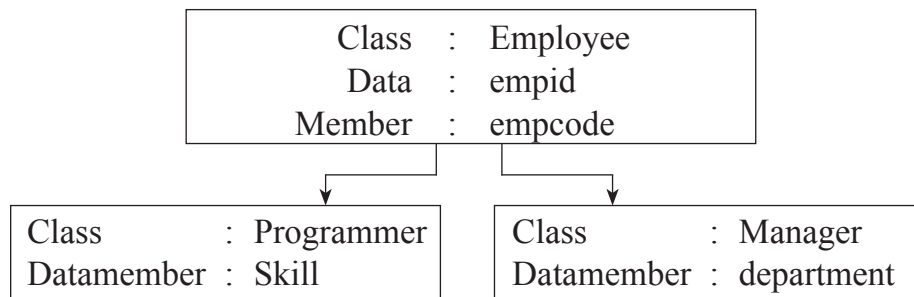
5. **Attempt any TWO of the following:** **12**

a) Write a C++ program to overload binary operator '+' to concatenate two strings.

b) Write a C++ program to write 'Welcome to poly' in a file. Then read the data from file and display it on screen.

c) Write a C++ program to declare a class 'Account' with data members as accno, name and bal. Accept data for eight accounts and display details of accounts having balance less than 10,000.

Marks

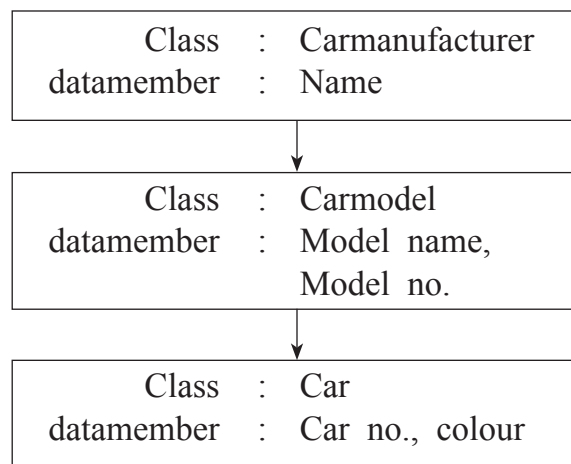**6.** a) **Attempt any TWO of the following:** 12

    (i)   Write a C++ program to find whether the entered number is even or odd.

    (ii)   Write a C++ program to declare a structure employee with members as empid and empname. Accept and display data for one employee using structure variable.

b) Write a C++ program to implement following inheritance.

```
Class   : Employee
Data    : empid
Member  : empcode
```

```
Class       : Programmer       Class         : Manager
Datamember  : Skill            Datamember : department
```

Accept and display data for one programmer and one manager. Make display function virtual.

c) Write C++ program for following multilevel inheritance.

```
Class      : Carmanufacturer
datamember : Name
```

```
Class      : Carmodel
datamember : Model name,
             Model no.
```

```
Class      : Car
datamember : Car no., colour
```

Accept and display data for one car with all details.

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