22316

21222

3 Hours / 70 Marks   Seat No.

15 minutes extra for each hour

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

Marks

1.   **Attempt any <u>FIVE</u> of the following.**   **10**

a) List two memory management operators available in C++. Also state its use.

b) List c++ stream classes along with their function. (any two classes)

c) Write any four applications of OOP.

d) Define constructor. List types of constructor

e) Explain ios :: app and ios :: in flags

f) Write any two characteristics of friend function.

g) State the need of virtual function in C++.

Marks

2.   Attempt any THREE of the following.   12

a) State and describe characteristics of object oriented programming.

b) Write a C++ program to declare a class college with name and code. Derive a new class as student with members as name. Accept and display details of one student along with college data.

c) Write a C++ program to declare a class student with data members as roll no and name. Declare a constructor to initialize data members of class. Display the data.

d) Describe concept of type casting using suitable example.

3.   Attempt any THREE of the following.   12

a) Write a C++ program to declare a class mobile having data members as price and model number. Accept and display the data for Ten objects.

b) Write a C++ program to copy the contents of a source file student 1.txt to a destination file student 2.txt using file operations.

c) Describe visibility modes and their effects used in inheritance.

d) Differentiate between compile time and run time polymorphism.

4.   Attempt any THREE of the following.   12

a) Describe the concept of virtual base class with example.

b) Write a C++ program to overload add function to add two integer numbers and two float numbers.

c) Write a C++ program to find and display the smallest number of an array.

d) Write a C++ program to declare a structure book with members as book id and name. Accept and display data of five books using array of structure.

e) Describe constructor with default arguments with an example.

Marks

5. Attempt any TWO of the following.   **12**

  a) i) Define pointer operator and address operator with example.

     ii) Write a C++ program to declare a class train with members as train no and name. Accept and display data for one object of train. Use pointer to object to call functions of class.

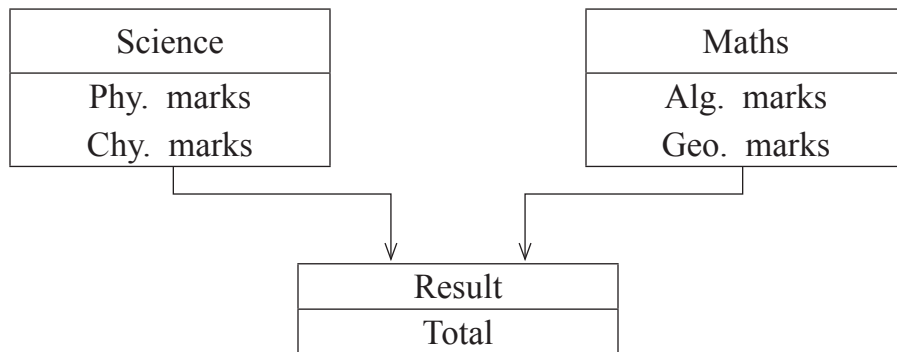 b) Write a C++ program to implement following inheritance: Refer Fig. No. 1.

Science
Phy. marks
Chy. marks

Maths
Alg. marks
Geo. marks

Result
Total

Fig. No. 1.

Accept and display total of one object of result.

  c) (Hint : class 1 contains m1 and class 2 contains m2)

Write a C++ program to declare two classes with data members as m1 and m2 respectively. Use friend function to calculate average of two (m1, m2) marks and display it.

6. Attempt any TWO of the following.   **12**

  a) Write any two characteristics of static data member. Write C++ program to count number of objects created with the help of static data member.

  b) Write a C++ program to overload "+" operator so that it will perform concatenation of two strings. (Use class get data function to accept two strings)

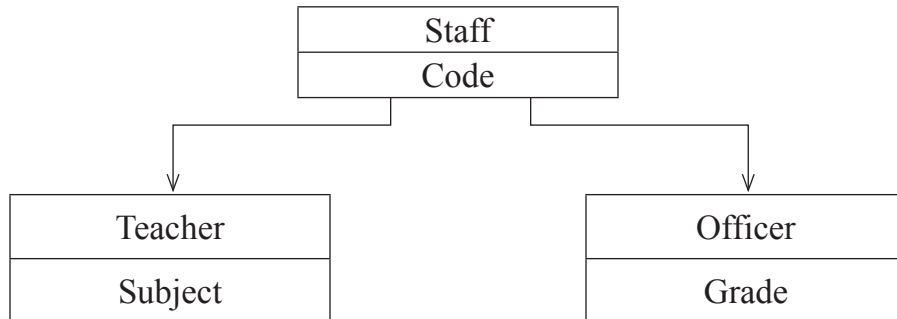c) Write a program to implement inheritance as shown in figure No. 2. Assume suitable member function

| Staff |
| Code |

| Teacher | | Officer |
| Subject | | Grade |

Fig. No. 2.

Accept and display data of one Teacher and one Officer.

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