

# 22316

**21819**

**3 Hours / 70 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

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

**10**

- State the use of cin and cout.
- Describe derived class with example.
- State use of scope resolution operator.
- Define class and object.
- Write the use of ios :: in and ios :: out.
- Describe use of static data member.
- Give meaning of following statements:

```
int * ptr, a = 5;
```

```
ptr = & a;
```

```
cout << * ptr ;
```

```
cout << (* ptr) + 1;
```

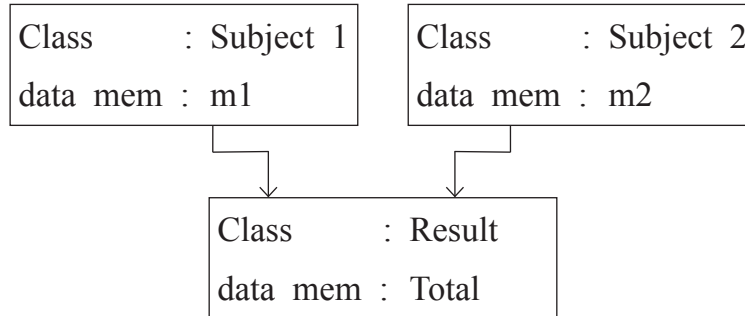
P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Write a 'C++' program to find factorial of given number using loop.
  - b) Write a C++ program to declare a class COLLEGE with members as college code. Derive a new class as STUDENT with members as studid. Accept and display details of student along with college for one object of student.
  - c) Write a C++ program to find smallest number from two numbers using friend function. (Hint : use two classes).
  - d) Differentiate between run time and compile time polymorphism.
- 3. Attempt any THREE of the following:** **12**
- a) Write a C++ program to create a class STUDENT  
The data members of STUDENT class.  
Roll\_No  
Name  
Marks
  - b) Accept data for five students and display it. Write a C++ program to display sum of array elements of array size n•
  - c) Describe with examples, passing parameters to base class constructor and derived class constructor by creating object of derived class.
  - d) Describe how memory is allocated to objects of class with suitable diagram.

4. Attempt any THREE of the following:

12

- a) Write a program to implement multiple inheritance as shown in following Figure No. 1:



**Fig. No. 1**

Accept and display data for one object of class result.

- b) Describe following terms: Inheritance, data abstraction, data encapsulation, dynamic binding.
- c) State and describe visibility modes and its effects used in inheritance.
- d) Write a C++ program to count number of spaces in text file.
- e) Differentiate between constructor and destructor.

5. Attempt any TWO of the following:

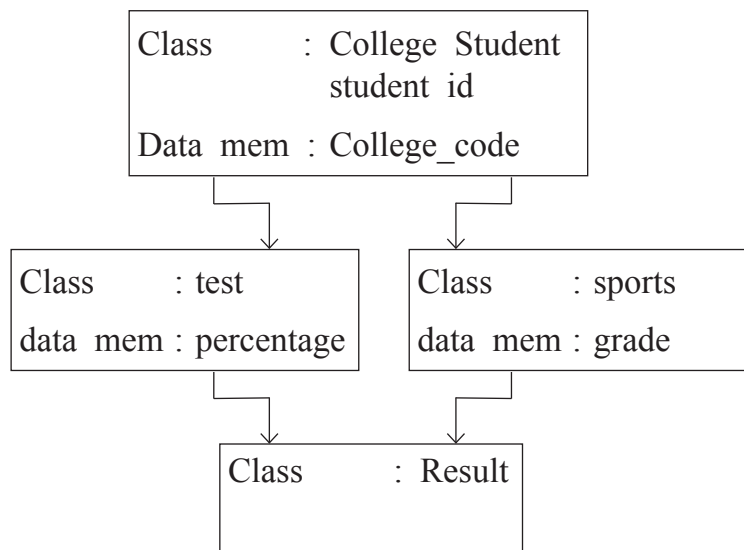
12

- a) (i) Write any three rules of operator overloading.
- (ii) Write a program in C++ to overload unary ‘\_’ operator to negate values of data members of class.
- b) Write a C++ program to append data from abc.txt to xyz.txt file.
- c) Write a C++ program to declare a class student with members as roll no, name and department. Declare a parameterised constructor with default value for department as ‘CO’ to initialize members of object. Initialize and display data for two students.

6. Attempt any TWO of the following:

12

- a) (i) Describe structure of C++ program with diagram.  
(ii) Write a C++ program to add two  $3 \times 3$  matrices and display addition.
- b) Write a program to swap two integers using call by reference method.
- c) Write a C++ program to implement following in heritage. Refer Figure No. 2.

**Fig. No. 2**

Accept and display data for one object of class result (Hint : use virtual base class).

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