16172

3 Hours / 100 Marks   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.

Marks

1.   (A)   **Attempt any SIX of the following :**   **12**

(a)   Which are the input-output operator in C++ ? Give suitable example.

(b)   Give significance of '&' and '*' operators.

(c)   Calculate the size of object B1 defined in following class :

Class Book

{

    char B_name[15];

    int B_id;

    int Price;

};

    Book B1;

(d)   List any four types of constructor.

(e)   What is polymorphism ? List its types.

(f) Define derived class. Give one example.

(g) Write syntax to create a pointer for object.

(h) Write syntax for overloaded constructor.

(B) Attempt any TWO of the following : **8**

(a) What do you mean by default argument ? Illustrate concept of constructor with default argument using suitable example.

(b) Draw and explain multiple inheritance with suitable example.

(c) What are the rules governing the declaration of a destructor member function ?

2. Attempt any FOUR of the following : **16**

(a) Explain access specifiers with suitable example.

(b) What is virtual function ? Why we need virtual function ?

(c) Write a program that illustrate multilevel inheritance.

(d) Differentiate between POP and OOP. (4 points)

(e) What is static member function ? How is it declare ?

(f) Write a program to declare class Account having data member as acc_no and balance. Accept and display data for five object using pointer to array of object.

3. Attempt any FOUR of the following : **16**

(a) Explain the structure of C++ program with suitable example.

(b) Explain multiple constructor in class. Give suitable example.

(c) Explain abstract class with suitable example.

(d) Write a program using function overloading to swap two integer number and swap two float number.

(e) What is 'this' pointer ? Give suitable example.

(f) How memory is allocated when multiple object of class are created ? Explain with example.

4. Attempt any FOUR of the following : 16

(a) Write a program to implement single inheritance. Declare base class 'Employee' with emp_no and emp_name. Declare derived class 'Fitness' with height and weight. Accept and display data for one employee.

(b) What is copy constructor ? Give the syntax and example for copy constructor.

(c) Explain scope resolution operator and memory management operator in C++.

(d) Explain friend function with suitable example.

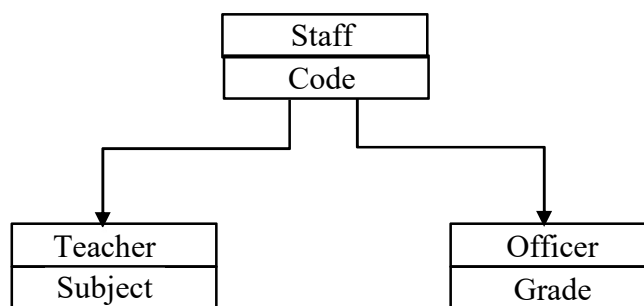(e) Write a program to implement inheritance as shown in Fig. 1. Assume suitable member function.

Fig. 1

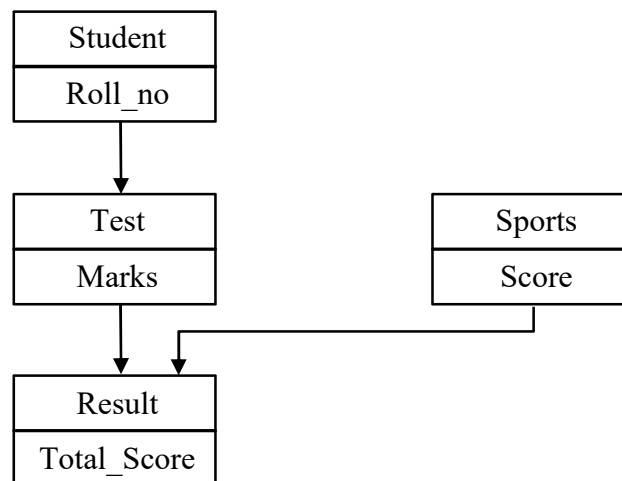(f) Write a program to insert an element at location of array.

5. **Attempt any FOUR of the following :** 16

    (a) State any four rules for operator overloading.

    (b) Give syntax and example of defining structure and declaring structure variables.

    (c) Create class shape. Derive two classes Triangle and Rectangle. Accept dimensions of Triangle and Rectangle with appropriate functions. Make area() function virtual which is common to all classes. With area function calculate area of triangle and rectangle. Display the result.

    (d) What are the features of procedure oriented programming ?

    (e) Write a program to search a character in a string using pointer.

    (f) Differentiate between compile time polymorphism and runtime polymorphism. (4 points)

6. **Attempt any TWO of the following :** 16

    (a) Write a program to declare a class student consisting of data member stud_name and Roll_no. Write program with member function accept() to accept and display() to display the data for four students.

    (b) Write a program to implement inheritance as shown in Fig.2 Assume suitable member function.

Student
Roll_no

| Test | | Sports |
|------| |--------|
| Marks | | Score |

Result
Total_Score

Fig. 2

    (c) Write a program to display string in reverse order by using pointer.

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