

17432

15116

3 Hours / 100 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. a) Attempt any SIX of the following:

12

- (i) List two memory management operators available in C++ and state its use in one line.
- (ii) How address of (&) operator is used in pointers, explain with example.
- (iii) Write only errors if any from following code.

```
class abc
{ private : int x ;
  public : void getdata ( ) ;
          { cout << "Enter data" ;
            cin << x ; }
} ;
```

- (iv) List four types of constructors.
- (v) Give any example where runtime polymorphism can be used.

P.T.O.

- (vi) State general format of defining derived class.
- (vii) Describe 'this' pointer with respect to its use only.
- (viii) Write example code of constructor with default argument (example code of constructor, only, not whole program)
- b) **Attempt any TWO of the following:** **8**
- (i) Explain concept of overloaded constructor in a class with example.
- (ii) State different types of inheritances and describe any one.
- (iii) Differentiate between constructor and destructor.
2. **Attempt any FOUR of the following:** **16**
- a) How memory is allocated to the objects of class, explain with diagram.
- b) What is need of virtual function? Explain with example.
- c) How protected access specifier is different from private?
- d) State any four applications of OOP.
- e) State any four characteristics of static data members.
- f) Write a program to declare class product having data members as product-id and price. Accept and display data for one object using pointer to the object.
3. **Attempt any FOUR of the following:** **16**
- a) Describe syntax of 'cin' and 'cout' with example.
- b) What is overloaded constructor in a class? Explain with example.
- c) What is Virtual Base class? Describe with suitable diagram.
- d) Write a program using function overloading to calculate addition of ten integer numbers and five float numbers.
- e) What is pointer to array? Explain with example.
- f) How function is defined outside of class, write general syntax and example of same.

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

- a) Write a program to implement single inheritance from following data. Accept and display data for one object.

Data ;

Base class_name = Furniture

Data_mem = material, price

Derived class_name = Table

Data-mem = height, surface - area.

- b) State any four characteristics of constructor.
- c) With suitable diagram describe structure of C++ program.
- d) Define friend function. Write syntax of declaring it.
- e) How hierarchical inheritance is achieved, explain with example.
- f) Write a program to display elements of array using pointer to array of integers.

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

- a) State any four rules of operator overloading.
- b) Define structure. Give syntax of defining structure.
- c) Create class shape. Derive two class triangle and rectangle from class shape. Write appropriate functions in both classes to accept dimensions and calculate area. Here make area () function virtual which is common to all and will calculate area of both rectangle and triangle. Display area of both.
- d) List any four features of POP.
- e) Define pointer. Give syntax of declaration and initialization of pointer.
- f) What is difference between compile time polymorphism and run time polymorphism?

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Marks

6. Attempt any TWO of the following:

16

- a) Write a program to declare class 'staff' having data members as name and post. Accept this data for 5 staffs and display name of staff who are HOD.
 - b) Write a program to demonstrate constructor in derived class with respect to order of calling constructor and passing parameters to base class constructor.
 - c) Write a program to concatenate two strings using pointer to string.
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