

**2018**

Full Marks : 60

Pass Marks : 27

Time : 3 hours

*The figures in the right-hand margin indicate marks*

Answer from **all** the Sections as directed

**Section—A**

**Answer all questions :**

1. Fill in the blanks :

12×1

(a) — operator automatically allocates enough memory to accommodate the object without using the size of operator.

(b) The — manipulator causes a linefeed to be inserted when used with an output statement.

(c) — can be accessed directly outside the class without using the object name.

( 2 )

- (d) If a copy constructor is explicitly defined, it performs the \_\_\_\_\_ copy of the objects by copying the length, actual data and address of the object.
- (e) When a derived class inherits from more than one base class simultaneously it is called \_\_\_\_\_ inheritance.
- (f) Redefining of the base class member function in the derived class is called function \_\_\_\_\_.
- (g) \_\_\_\_\_ function cannot be global or static.
- (h) A class that contains at least one pure virtual function is known as an \_\_\_\_\_ class.
- (i) The \_\_\_\_\_ pointer is a special pointer that contains the address of an object of a class currently calling the member function of the class.
- (j) \_\_\_\_\_ is the only function that cannot be overloaded.

K/8(195)

(Continued)

( 3 )

- (k) An \_\_\_\_\_ function is a function whose code is copied in place of each function call.
- (l) The default mode of ifstream class is \_\_\_\_\_.

2. State True or False of the following : 6×1

- (a) A reference variable defined to refer to a variable can also refer to other variable.
- (b) The extraction operator considers a space to be a terminating character.
- (c) Default arguments appear only in function declarations.
- (d) An array that is a data member of the class cannot be initialized at the time of its declaration in the class.
- (e) The non-member functions can access the private data members of the class.
- (f) A friend function cannot be inherited.

K/8(195)

(Turn Over)



( 4 )

3. Choose the correct options : 6×1

(a) Which one of the following entities are connected by the dot operator?

- (i) A class and a class object
- (ii) A class and its member
- (iii) A class object and a member
- (iv) All of these

(b) Which one of the following is the default access specifier for the class members?

- (i) Private
- (ii) Public
- (iii) Protected
- (iv) Static

(c) If  $m$  and  $n$  are pointers of type `int` and  $x$  is an `int` type variable, which one of the following expressions is valid?

- (i)  $m * y$
- (ii)  $m + y$
- (iii)  $my$
- (iv)  $m - n$

( 5 )

(d) The class whose objects cannot be created is known as

- (i) concrete class
- (ii) base class
- (iii) abstract class
- (iv) derived class

(e) Which type of class prevents its duplication?

- (i) Derived class
- (ii) Base class
- (iii) Indirect base class
- (iv) Virtual base class

(f) Which one of the following is an abstract data type?

- (i) `int`
- (ii) `double`
- (iii) `string`
- (iv) `class`

#### Section—B

4. Answer any four questions of the following : 4×3

(a) How is a static member function invoked? Give an example.

(6)

(b) Give an example to explain the need of destructor in a class.

~~(c)~~ What is the virtual base class? 9

(d) What is function template? How is it defined? 18

(e) Differentiate between a class and an object. 10

~~(f)~~ What are the advantages of using new operator over malloc() function?

#### Section—C

5. Answer any four questions of the following : 4×6

~~(a)~~ Write a C++ program to implement a **complex** class that contains two data members to store the real and imaginary parts of a complex number. Include member functions to initialize the data members, to display the complex objects in the form 'a+ib' and to add two **complex** objects storing the result in a third object.

(7)

(b) Write a C++ program to define a class string. Overload + operator to concatenate first name and last name entered by the user. 12

~~(c)~~ How are constructors and destructors called in multiple and multilevel inheritance? 13

~~(d)~~ Write a C++ program to print out all Armstrong numbers between 1 and 500.

(e) Discuss the various features of object-oriented programming. 14

(f) What is the difference between a class template and an ordinary class? 24

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(f) 24