

Time: 3 Hours

**DECEMBER 2013**

Max. Marks: 100

**PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.**

**NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

- a. \_\_\_\_\_ is a process by which we can group objects together.
- (A) Classification (B) Association  
(C) Integration (D) Implementation
- b. The loop for ( ; ; ) will
- (A) Executes only one time (B) Create infinite loop  
(C) Not executes (D) Syntax error
- c. Identify the type of inheritance in which “a subclass inherits from more than one superclass”.
- (A) Multilevel inheritance (B) Multiple inheritance  
(C) Single inheritance (D) Both (A) and (B)
- d. A special member function in C++ class which is automatically invoked when an object is created is known as \_\_\_\_\_.
- (A) Overloaded function (B) Inline function  
(C) Constructor (D) Pure Virtual function
- e. \_\_\_\_\_ is a pointer of the type of the class and points to an object of the class, when a member function is invoked.
- (A) this (B) dot operator  
(C) scope resolution pointer (D) dangling pointer
- f. When you overload an arithmetic assignment operator, the result
- (A) goes in the object to the right of the operator  
(B) goes in the object to the left of the operator  
(C) goes in the object of which the operator is a member  
(D) must be returned

- g. The actual source code for implementing a template function is created when \_\_\_\_\_.
- (A) the function is actually executed
  - (B) the declaration of the function appears
  - (C) the function is invoked
  - (D) the definition of the function appears
- h. The member functions that returns the next character from the input stream without removing the character from the stream is \_\_\_\_\_.
- (A) peek()
  - (B) putback(ch)
  - (C) flush()
  - (D) none of these
- i. A constructor having a reference to an instance of its own class as an argument is known as \_\_\_\_\_.
- (A) Overloaded constructor
  - (B) Copy constructor
  - (C) Parameterized constructor
  - (D) Constructor function
- j. Name the function which is invoked when an exception is raised and the exception handler is not found.
- (A) exit()
  - (B) terminate()
  - (C) error()
  - (D) catch()

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**Answer any FIVE Questions out of EIGHT Questions.**  
**Each question carries 16 marks.**

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- Q.2** a. Discuss the fundamental features of the object oriented programming. (6)
- b. What is the advantage of a sizeof ( ) operator? (4)
- c. Explain the difference between : (6)
- (i) 'A' and "A"
  - (ii) a = b and a == b
  - (iii) a & b and a & & b
- Q.3** a. Explain the use of *break* statement in *switch-case* statement. (4)
- b. Write the syntax for accessing structure members in C++. Also construct a structure called "*Student*" whose members are roll\_no, name, branch and marks. Use this structure in your program that will read student information and then display that information. (8)

- c. Write some situations where the usage of pointers is required. (4)
- Q.4** a. Define *Inline function*. What are the guidelines that need to be followed for deciding if the function is to be used as a member function or inline function? (6)
- b. What are the conditions that must be satisfied for function calling? (4)
- c. What is function overloading? Write overloading functions for swapping two character, two integer and two float parameters. (6)
- Q.5** a. Design a class to represent “account” information of an individual that includes following members:-
- Data Members
- Name of account holder ----- String
  - Account number ----- int
  - Type of Account ----- char
  - Balance Amount ----- float
- Member Functions
- To assign initial values (using constructor)
  - To display the name of account holder, account number, account type and balance amount in the account.
  - To deposit an amount in the account.
  - To withdraw an amount.
- Use the above class to write an interactive program. (10)
- b. Why is destructor function required in a class? What are the special rules that should be considered while defining a destructor function for a class? (6)
- Q.6** a. Write the steps that involves the process of operator overloading. (4)
- b. Give the syntax for overloading a binary operator. Write a program to overload the binary operator + in order to perform addition of complex numbers. (8)
- c. Is it possible to overload the ternary (? :) operator? Support your answer with proper reason. (4)
- Q.7** a. Explain the term Polymorphism. What are the different forms of polymorphism? (5)
- b. Explain the difference between inheriting a class with public and private visibility mode. (5)
- c. What is a virtual member function? What is a pure virtual function? How do you override a virtual member function? (6)
- Q.8** a. Write a program using function template to find the cube of a given integer, float and a double number. (8)

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- b. Create a class `number` to store an integer number and the member function `read()` to read a number from console and the member function `div()` to perform division operations. It raises exception if an attempt is made to perform *divide-by-zero* operation. It has an empty class name `DIVIDE` used as the throw's expression-id.

Write a C++ program to use these classes to illustrate the mechanism for detecting errors, raising exceptions, and handling such exceptions. (8)

- Q.9** a. Write a C++ program to display the contents of a file on the console, where filename is entered interactively. (7)

- b. Explain the following:

- (i) `ifstream`
- (ii) `ofstream`
- (iii) `fstream`

(3x3)