CS/B. TECH/IT/ODD SEM/SEM-5/IT-504F/2016-17

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Paper Code : IT-504F

PROGRAMMING PRACTICE USING C++

Time Allotted : 3 Hours   *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

$10 \times 1 = 10$

i)   A friend function has access to

a)   all private and protected members of the class for which it is a friend

b)   only private members

c)   all public members

d)   none of these.

ii)   Which is true regarding inline function ?

a)   It does not save memory space

b)   It saves memory space

c)   More calling is needed

d)   Inline functions may not be class member functions.

iii)   Virtual functions implement the

a)   'one interface, multiple methods'

b)   'multiple methods, one interface'

c)   'one interface only'

d)   'one method only'.

iv)   To declare a pure virtual function, which general form is used ?

a)   virtual type func-name (parameter-list) = 0 { } ;

b)   virtual type func-name (parameter-list) = 0 ;

c)   func-name (parameter-list) = 0 ;

d)   virtual type (porameter-list) ;

v)   Which of the following is not the member of a class ?

a)   Static function   b)   Constant function

c)   Virtual function   d)   Friend function.

vi) Which is used to remove the ambiguity when multiple base classes are inherited ?

a) Virtual base classes

b) Virtual function

c) Pure virtual function

d) All of these.

vii) Which is true if the base class contains a constructor ?

a) Base class constructor is called first followed by derived class

b) Derived class constructor is called first followed by base class

c) Both (a) and (b)

d) None of these.

viii) For dynamic memory allocation which of the following is used ?

a) New, delete operators

b) Malloc, free

c) Both (a) and (b)

d) None of these.

ix) Which is not overloaded in friend operator functions ?

a) = 　　　　　　　　b) ( )

c) [ ] 　　　　　　　d) All of these.

x) Friend function

a) can have the pointer

b) cannot have the pointer

c) cannot be overloaded

d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following 　　3 × 5 = 15

2. Discuss the difference between C and C++.

3. How can we declare and initialize a static data member in a class ? What are the features of a static member function ? 　　　　　　　　　　2 + 3

4. How can we create an abstract class in C++ ? How can we use the member functions of an abstract class ? Discuss with example. 　　　　　　　2 + 3

5. What is initialization list ? How can we use it ? Discuss one of the most important uses of it with example.

$1 + 1 + 3$

6. Discuss function overloading with proper example. When does the ambiguity problem arise ? $4 + 1$

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Write a program using constructor overloading to find out sum of integer arrays and sum of float arrays with 5 elements. 4

b) What do you mean by friend functions ? Create a class called searching and write a friend function called search ( ) to search for any element in an array. $2 + 4$

c) Define a class BOOK with the following specifications : 5

Private members of the class BOOK are

BOOK NO   integer type

BOOKTITLE   20 characters

PRICE   float (price per copy)

TOTAL_COST( )   function to calculate the total cost for N number of copies where N is passed to the function as argument.

Public members of the class BOOK are

INPUT ( )   function to read BOOK_NO., BOOKTITLE, PRICE

PURCHASE ( )   function to ask the user to input the number of copies to be purchased. It invokes TOTAL_COST ( ) and prints the total cost to be paid by the user.

8. a) Differentiate between call-by-value and call-by-reference with suitable examples. 5

b) Create a Class called 'EMPLOYEE' that has EMPID, EMPNAME, EMPADDRESS AND EMPSALARY as data members. Member function getdata () to iput data and display () to output data. Write a main () function to create EMP, an array of EMPLOYEE objects. Accept and display the details of at least 5 employees. 5

c) What do you mean by method overriding ? Illustrate with an example. 5

9. a) Write a program to make a simple calculator using operator overloading. 5

b) Write advantages of using new ( ), delete ( ) over malloc ( ), free ( ) with suitable example. 5

c) Write a program to find out whether any number entered is a palindrome or not. 5

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10. a) Create a Class called SORT and write a main () function to sort an array of integer in ascending order.   5

   b) Write a program to calculate factorial of a given number using copy constructor. Declare the class name as Copy with data members and member functions.

     The constructor Copy () with argument to assign the value.

     Define a function calculate () to find out the factorial.   5

   c) What do you mean by Virtual function ? Illustrate with example.   5

11. a) Write a program for calculating the marks secured by a student. A parent class with student identification is created and another class called marks is inherited from the main class. This class marks is further inherited by another class called sports and finally the sports class is inherited by the percentage class to calculate the percentage of marks.   5

   b) What is exception handling ? Illustrate with suitable example.   5

   c) Differentiate between polymorphism and inheritance.   5