Reg. No. : | | | | | | | | | | |

Question Paper Code: 51234

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Computer Science and Engineering

15UCS304 - OBJECT ORIENTED PROGRAMMING WITH C++

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The preprocessor directive #include is required if _____.

   (a) console output is used (b) console input is used
   (c) both console input and output is used (d) none of the above

2. What is the right way to declare a copy constructor of a class if the name of the class is *X*?

   (a) *X* (const *X** arg) (b) *X* (const *X* & arg) (c) *X* (*X* arg) (d) *X*(*X** arg)

3. The purpose of abstract class is to_____

   (a) provide help with database connectivity
   (b) provide data input to other classes
   (c) provide security to other classes
   (d) provide an appropriate base class from which other classes can inherit

4. Additional information sent when an exception is thrown may be placed in _____

   (a) the throw keyword (b) the function that caused the error
   (c) the catch block (d) an object of the exception class

5. If we create a file by 'ifstream', then the default mode of the file is _____

(a) ios :: out (b) ios :: in (c) ios :: app (d) ios :: binary

PART - B (5 x 3 = 15 Marks)

6. How can a common friend function to two different classes be declared?

7. How many times is the copy constructor called in the following code?

```
Apple func(Apple u)
{
Apple w=v;
Return w;
}
void main()
{
Apple x;
Apple y = func (x);
Apple z = func (y);
}
```

8. Is it possible to instantiate the abstract class? Justify your answer.

9. What do you mean by catch all exceptions? Give its syntax and explain.

10. Write a C++ program to open and close the file.

PART - C (5 x 16 = 80 Marks)

11. (a) (i) Discuss in detail the basic concepts of object oriented programming. (8)

(ii) What is encapsulation? What are its advantages? How can encapsulation be enforced in C++? (8)

Or

(b) (i) Write a program to create an integer type array of size 10 and find out the element of highest density, i.e. the element within the array that occurs the maximum number of times. E.g. *A* [ ] = {15, 89, 45, 85, 63, 15, 89, 15, 25, 12} then output is 15. (8)

(ii) What are the advantages and disadvantages of inline functions? (8)

12. (a) (i) Create a class test with two integer data members *x* and *y* and a member function print ( ). Initialize the data members using constructors. (Use default, parameterized, copy constructor). (8)

(ii) Why is destructor function required in class? What are the special characteristics of destructors? Can a destructor accept arguments? (8)

Or

(b) (i) Create a class vector that represents an integer array. Using friend function overload * operator to perform 3*m, where m is an object of the class vector. Test the class with suitable main function. Can we use member function to overload the * operator instead of friend function? Justify your answer. (8)

(ii) Differentiate between Unary and Binary operator overloading. (8)

13. (a) (i) What do you understand by a base class and a derived class? If both the base and derived class have a member function with the same name and arguments, which member function will be called by the object of the derived class if the scope resolution operator is not used? (8)

(ii) When do we make a base class as a virtual base class? In what type of inheritance, we will use it? (8)

Or

(b) (i) Discuss in detail about run time polymorphism with suitable examples. (8)

(ii) Explain virtual functions and pure virtual functions with examples. (8)

14. (a) (i) Write a function template to perform linear search in an array. (8)

(ii) Write a program to read three numbers *x*, *y* and *z* and evaluate *R* given by $R = z / (x - y)$. Use exception handling to throw an exception in case division by zero is attempted. (8)

Or

(b) (i) What is exception specification? Explain when it is required with suitable example. (8)

(ii) Illustrate try…multiple catch statements and rethrown exception with suitable examples. (8)

15. (a) (i) What are manipulators? Discuss the various predefined manipulators supported by C++ streams. (8)

(ii) Write a C ++ program to count and display the number of blank spaces in anexisting text file notes.txt. (8)

Or

(b) (i) Explain the various functions required for random access file operations. (8)

(ii) Write a program to read bio-data of the students from the console and write to a file. Filename should be accepted from command line. (8)