

Code : 051301

B.Tech 3rd Semester Examination, 2016

Object Oriental Programming

Time : 3 hours

Full Marks : 70

Instructions :

- (i) There are Nine Questions in this Paper.
- (ii) Attempt Five questions in all.
- (iii) Question No. 1 is Compulsory.
- (iv) The marks are indicated in the right hand margin.

1. Explain briefly about the following terms (any seven):  
(7×2=14)

- (a) Overloading ✓
- (b) Overriding
- (c) C++ STL ✓
- (d) Constructor ✓
- (e) Destructor ✓
- (f) Inheritance ✓
- (g) Encapsulation ✓
- (h) Templates
- (i) Protected variable ✓
- (j) Private function

P.T.O.

2. (a) Write a C++ program to overload '-' operator to calculate age from date of birth and current date.

14

3. (a) What is a friend function and what are its advantages?

7

(b) What are the guidelines that should be followed while using friend function ?

7

4. Compare overloading and overriding of function with example.

14

5. What is exception handling ? Write a C++ program to demonstrate the 'try', 'catch' and 'throw' keywords?

14

6. Define C++ classes to represent the information of an ORGANISATION having EMPLOYEES and CLIENTS. Provide subclasses MANAGER, CLERK and SUPPORT\_STAFF. In this organisation employees work on projects requested by clients.

14

7. (a) What is virtual function ? Explain with an example.

7

(b) Explain the abstract class with an example.

7

8. Explain inline functions with an example program. What are the conditions, where inline functions cannot be expanded ?

14

9. (a) What is the difference between compile time and run time errors? What is the use of stack unwinding in exception handling? 7
- (b) Discuss void, this and const pointers. 7

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- (b) Class Y has been derived from class X. The class Y does not contain any data members of its own. Does the class Y require constructor? State your answer with Yes or No and why.
8. (a) What is operator overloading? List out the operators that cannot be overloaded.
- (b) What are generic classes? Why are they useful? Explain with an example how these are implemented in C++.
9. Differentiate between the following and give examples to bring out the difference :
- (a) Private and public inheritances
- (b) Instantiation and specialization of a template class
- (c) Static and dynamic bindings
- (d) A class and a struct

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**B.Tech 4th Semester Exam., 2016****OBJECT-ORIENTED PROGRAMMING**

Time : 3 hours

Full Marks : 70

Instructions :

- (i) **All** questions carry equal marks.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Choose the correct answer (any seven) :

(a) What is the output of the following code?

```
char symbol[3]={'a','b','c'};
for (int index=0; index<3; index++)
cout<<symbol [index];
```

- (i) a b c
- (ii) "abc"
- (iii) abc
- (iv) 'abc'

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(b) If a class *C* is derived from class *B*, which is derived from class *A*, all through public inheritance, then a class *C* member function can access

- (i) protected and public data only in *C* and *B*
- (ii) protected and public data only in *C*
- (iii) private data in *A* and *B*
- (iv) protected data in *A* and *B*

(c) In C++, the range of signed integer type variable is

- (i) 0 to  $2^{16}$
- (ii)  $-2^{15}$  to  $2^{15} - 1$
- (iii)  $-2^7$  to  $2^7 - 1$
- (iv) 0 to  $2^8$

(d) The function whose prototype is `void getData(Item * thing);` receives

- (i) a pointer to a structure
- (ii) a reference to a structure
- (iii) a copy of a structure
- (iv) four bytes

(e) Format flags may be combined using the

- (i) bitwise OR operator (`|`)
- (ii) logical OR operator (`||`)
- (iii) bitwise AND operator (`&`)
- (iv) logical AND operator (`&&`)

(f) Which of the following types of class allows only one object of it to be created?

- (i) Virtual class
- (ii) Abstract class
- (iii) Singleton class
- (iv) Friend class

(g) `cout` is a/an

- (i) operator
- (ii) function
- (iii) object
- (iv) macro

(h) The size of object is equal to

- (i) total size of member data variables
- (ii) total size of member function
- (iii) Both (i) and (ii)
- (iv) None of the above

- (i) If  $A$  and  $B$  are Boolean variables, then the expression  $(!A) \parallel (!B)$  is equivalent to which of the following conditions?
- $(!(A \&\&B))$
  - $(!(A \parallel B))$
  - $(!A) \&\& (!B)$
  - True
- (j) What will be stored in  $n$  by the following statements?
- ```
int n;
n = 17 + 10/7;
```
- 18
  - 3
  - 3.857..
  - 18.428..
2. (a) Write a program that defines a shape class with a constructor that gives value to width and height. Then define two sub-classes triangle and rectangle, that calculate the area of the shape  $area()$ . In the main, define two variables a triangle and a rectangle and then call the  $area()$  function in this two variables.
- (b) What are pure virtual functions? Write the syntax.

3. (a) What is inline function? What are its advantages and disadvantages?
- (b) Draw the exception handling model.
4. (a) What is multilevel inheritance? How is it different from multiple inheritance?
- (b) How can a common friend function to two different classes be declared?
5. (a) What are the basic differences between manipulators and IOS member functions in implementation? Give examples.
- (b) What is object-oriented programming? How is it different from procedure-oriented programming?
6. (a) Explain the following functions with examples for manipulating file pointers :  
 $seekg()$ ,  $seekp()$ ,  $tellg()$ ,  $tellp()$
- (b) What is the difference between passing a parameter by reference and constant reference? Explain with an example.
7. (a) Write a program that asks the user for an integer number and find the sum of all natural numbers up to that number.