(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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# Code : 051401

## 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'

(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 $(!A) \,||\, (!B)$ is equivalent to which of the following conditions?

(i) $(!(A \&\& B))$

(ii) $(!(A \,||\, B))$

(iii) $(!A) \&\& (!B)$

(iv) True

(j) What will be stored in n by the following statements?

```
int n;
n = 17 + 10/7;
```

(i) 18

(ii) 3

(iii) 3.857..

(iv) 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.



( Continued )



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.



( Turn Over )