Total No. of Questions—**5**] [Total No. of Printed Pages—**4+2**

Seat No.	

[4968]-4001

B.C.A. (Fourth Semester) EXAMINATION, 2016

OBJECT ORIENTED PROGRAMMING USING C++

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) All questions carry equal marks.

(*iv*) Neat diagrams must be drawn wherever necessary.

(*v*) Assume suitable data if necessary.

1. Attempt any *eight* of the following : [8×2=16]

(*a*) List types of inheritance.

(*b*) Is there a need to call a constructor function explicitely ? Justify.

(*c*) What is this pointer ?

(*d*) Define the following terms :

(*i*) Class

(*ii*) Encapsulation.

(*e*) What is a stream ? Enlist various stream classes.

(*f*) Define const member function.

(*g*) What is class template ?

P.T.O.

(*h*) List the situations where inline function doesn't work.

(*i*) Define eof( ) function.

(*j*) What is free store operator ? List free store operators.

2. Attempt any *four* of the following : [4×4=16]

(*a*) What is function overloading ? Write the steps to find unique match during compilation.

(*b*) Write a note on static data member.

(*c*) Differentiate between C and C++.

(*d*) Write a C++ program to read contents of file "ABC.txt". Write all even numbers in "even.txt" and odd numbers in "odd.txt". Display contents of both the files.

(*e*) Design a base class customer (name, phone-no). Derive a class depositor (accno, bal) from customer. Again derive a class borrower (loan-no, loan-amt) from depositor. Write necessary member functions to read and display the details of n customers.

3. Attempt any *four* of the following : [4×4=16]

(*a*) Write a note on function template.

(*b*) Explain the structure of a C++ program with example.

(*c*) What are the rules for defining virtual function ?

(*d*) Design a C++ class which contains function display( ). Write a program to count number of times display( ) function is called. (Use static data member).

(*e*) Write a C++ program to create a base class increment. Write necessary member functions to overload the operator unary pre & post increment '++' for an integer number.

4. Attempt any *four* of the following : [4×4=16]

(*a*) Define inheritance. Explain the visibility scope of private, public and protected access specifiers.

(*b*) Explain any *four* unformatted Input/Output functions.

(*c*) Write a C++ program to find maximum of two integer numbers by using function template.

(*d*) Write a C++ program to create a class worker with data members as worker-name, no-of-hours-worked, pay-rate. Write necessary member functions to calculate and display the salary of worker. (Use default value for pay-rate).

(*e*) Trace the output of the following program and explain it. Assume that there is no syntax error :

```
# include<iostream.h>
# include<conio.h>
int count = 0;
class alpha
{
    public :
        alpha( )
        {
```

```
        count ++;
        cout << "\n No. of objects created"<< count;
        }
        ~ alpha( )
        {
        cout<< "\n No. of objects destroyer" << count;
        count --;
        }
};
int main( )
{
        count << "\n Enter main";
        alpha a1, a2;
        {
        cout << "\n Enter block 1";
        alpha a3;
}
        {
        cout << "\n Enter block 2";
        alpha a4;
        }
        cout << "\n Re-enter main";
        return 0;
}
```

5. Attempt any *four* of the following : [4×4=16]

(*a*) What is constructor ? Explain default constructor and copy constructor.

(*b*) Define file. Explain different ways to open a file.

(*c*) Design a class student. Include data members rollno, name, city & age. Write member functions :

(*i*) to accept information of '*n*' students

(*ii*) to display information of '*n*' students

(*iii*) to search details of a student using roll-no

(Use array of objects).

(*d*) Write a C++ program to find area of triangle, circle and rectangle using function overloading.

(*e*) Trace the output of the following program & explain it. Assume that there is no syntax error.

```
# include <iostrem.h>
# include <conio.h>
class base
{
    public :
        Virtual void fun( )
        {
        cout<< "\n This is base's function";
        }
};
```

```
class derived : public base
{
    public :
        void fun( )
        {
        cout << "\n This is derived's function";
        }
};
void main( )
{
    base *p, b;
    derived d;
    p = & b;
    p → fun( );
    p = & d;
    p → fun( );
}
```