DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER III [IT]
SUBJECT: (IT-303) OBJECT ORIENTED PROGRAMMING

Examination	**: Second Sessional**	**Seat No.**	**: _____**
Date	**: 08/09/2016**	**Day**	**: Thursday**
Time	**: 11:00 to 12:15**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Answer the following: **[12]**

(A) Differentiate between function Overriding and Overloading **[2]**

(B) Compiler will generate error if we overload '==' operator for appending/concatenating two strings. State true / false with justification **[2]**

(C) If no constructors are specified for a derived class, objects of the derived class will use constructors of the base class. State true or false with justification. **[2]**

(D) What is containership? Define its programming structure. **[2]**

(E) Find out the errors in below code if any, correct it and write the output. **[4]**

a)
```
#include<iostream.h>
Class X
{ private : int x1;
  public:
  X(){cout<<"default constructor";}
  X(int x2):Y(x1)
  {x1=x2;
  cout<<"Arg-constructor in base";}};
Class Y:X
{public:Y(int x1):X(x1)
 {cout<<"Arg-constructor in derived";}};
 void main()
 { Y y1(10);}
```

b)
```
#include<iostream.h>
class A
 {protected: int prta;
  public: int pa;};
class B : private A
 {protected:  int prtb;
  public: int pb;
   void show(){cout<<prta;}};
 void main()
 {B b1;cout<<b1.pa;
  b1.show();}
```

Q.2 Answer the following: **[12]**

(A) Explain different visibility(variable access) modes. **[2]**

(B) Differentiate between private inheritance and public inheritance **[4]**

(C) Create a base class account with Account number, account holder name and amount as data members. Derive two classes saving account and current account from it with rate of interest as data members. [Current account have 3% rate of interest and saving account have 6% rate of interest]. Create constructor, deposit() ,withdraw() and display_balance() member functions in each and every class. Display_balance() should compute the interest and add to the balance while displaying it. **[6]**

OR

(C) An electricity board charges the following rates to domestic users to discourage large consumption of energy : **[6]**
For the first 100 units − 50 P per unit
Beyond 300 units − 60 P per unit
If the total cost is more than Rs.250.00 then an additional surcharge of 15% is added on the difference. Define a class Electricity in which the function Bill computes the cost. Define a derived class More_Electricity and override Bill to add the surcharge.

Q.3 Answer the following: **[12]**

(A) Explain the concept of specialization and generalization with respect to inheritance. **[2]**

(B) Create a multi dimensional array to store any five color names. Write a program to sort array and display in ascending order. **[4]**

(C) Create a class distance with feet and inches as data members. Distance can be provided in terms of feet and inches as well as in terms of meters. The first object of distance should get the input in terms of feet and inches, and display it in meters. The second object of distance should get input in terms of meters and display it in feet and inches[hint: feet=meter*3.281]. **[6]**

OR

Q.3 Answer the following: **[12]**

(A) List the operators which can be overloaded and which cannot be overloaded. **[2]**

(B) Create a class stack with push and pop functions. Derive enhanced_stack class from stack to check overflow and underflow conditions in push and pop function. **[4]**

(C) Create a class polar with radius(r) and angle(a) as data members. Create a class rectangle with length and width as data members. Write down the constructor, parameterized constructor and display function in both the classes. Also write down the conversion routine to convert polar data to rectangular coordinates in appropriate class [hint: to convert polar to rectangle use x=r*cos(a), y=r*sin(a)]. **[6]**

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