CT 1 on Object Oriented Programming (using C++), Total points: 20, Time: 20 minutes

Caution: Answers without explanation will not be evaluated.

1. It is not possible to access private members of a class from the main ( ) directly or indirectly (T/F)
2. A constructor returns an object of the corresponding class type. (T/F)
3. The base class is more powerful than the derived classes. (T/F)
4. For a pure virtual function we may not define it in the derived classes. (T/F)
5. To prevent accident modification of data in call by reference we need to use the virtual keyword. (T/F)

CT 2 on Object Oriented Programming (using C++), Total points: 20, Time: 15 minutes

Caution: Answers without explanation will not be evaluated.

1. const int* p; //p is mutable (T/F)
2. Point p(1,2); //it is compile time object allocation. (T/F)
3. If new() is successful, 1 is returned. (T/F)
4. A dynamically allocated object gets deleted, once the program exits. (T/F)
5. Write a short note on the copy constructor.

Heaven's Light is Our Guide

RAJSHAHI UNIVERSITY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
1st Year Even Semester Examination 2017

COURSE NO: CSE 1203 COURSE TITLE: Object Oriented Programming

FULL MARKS: 72 TIME: 3 HRS

N.B. (i) Answer any SIX questions taking any THREE from each section.
(ii) Figures in the right margin indicate full marks.
(iii) Use separate answer script for each section.

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SECTION : A

26

Q.1 (a) What is object oriented programming? List the features of object oriented programming. 4

(b) Write a program to declare a class "employee" consisting of data members' emp_no and emp_name. Write the member functions accept() to accept and display() to display the data for five employees. 4 4

(c) What is a constructor? What is a destructor? When are they executed? 2 2

(d) Find error, if any, from the following code. 2 2

```
1  #include<iostream.h>
2  class xyz{
3     private: int d1;
4              float d2;
5     public: void xyz();
6             void display();
7  };
8  void main(){
9     xyz s;
10    s.showdata();
11 }
```

Q.2. (a) Explain the concept of "this" pointer. 2 2

(b) What happens when a protected member is inherited as public? What happens when it is inherited as private? What happens when it is inherited as protected? 3 3

12 (c) Given the following base class, 4 4

```
class area_cl{
  public:
   double height;
   double width;
};
```

Creat two derive classes called rectangle and isosceles that inherit area_cl. Each class includes a function called area() that returns the area of a rectangle or isosceles triangle, as appropriate. Use parameterized constructors to initialize height and width.

(d) What is runtime polymorphism? Compare overloading and overriding with an example. 3 3

Q.3 (a) In procedure oriented programming, all data are shared by all functions. Is this statement true? Justify your answer. 2 2

6 (b) What do you mean by copy constructor? Why do you need to use copy constructor? Explain with an example. 4 4

(c) Write down some attributes of using friend function. 3

(d) Why are the following two overloaded functions inherently ambigious? 3

```
int f(int a);
int f(int &a);
```

Q.4. (a) What are the advantage(s) of call by reference over call by value approach? Discuss the problem(s) and solution(s) of call by reference as well. 5

(b) Design a template for calculating the minimum of two objects. Test your template for integer, float and string type objects. 4

(c) Define the term: super, casting object and final. 3

SECTION : B

21

Q.5 (a) What will be the output of the following program? 4 4

7

```
void execute(int x, int y=200){
  int temp = x+y;
  x+=temp;
  if(y!=200)
    cout<<temp<<x<<y<<endl;
```

P.T.O

```
}

void main(){
  int a = 50,b=20;
  execute(b);
  cout<<a<<b<<endl;
  execute(a,b);
  cout<<a<<b<<endl;
}
```

(b) Write short note on: 4 3
(i) Exception handling mechanism.
(ii) Friend function and friend class.

What will be the status of C++ I/O file if we use the following flags: Write down the meaning of each. (i)`goodbit` (ii) `failbit` (iii) `badbit` (iv) `eofbit` 4 0

Q.6 (a) Differentiate between the following case: (i) `int* p;` (ii) `const int* p;` (iii) `const int* const p;` (iv) `int* const p;` 4 4

(b) Discuss about the default constructors that C++ provides. 4 4

(c) What is the key principle behind operator overloading? 4 1

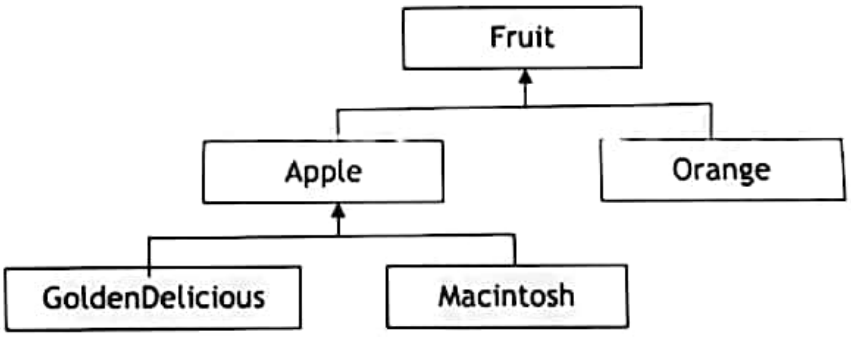
Q.7. (a) How does java support multiple interfaces? Define how a class or interface inherits an interface. 4

(b) Write a java program to create two threads, one thread will print odd numbers and second thread will print even numbers between 1 to 20. 4

(c) What is meant by synchronization? With an example, state why do we need it? 4

Q.8. (a) How do you explicitly invoke a superclass's constructor from subclass? Explain with an example. 4 0

(b) Suppose that, Fruit, Apple, Orange, GoldenDelicious Apple and Macintosh Apple are declared as shown in figure. 5 5



Assume that the following declareation is given:

Fruit fruit = new GoldenDelicious();
Orange orange = new Orange();

Answer the following questions:

i) Is fruit instance of Fruit?
ii) Is fruit instance of Orange?
iii) Is fruit instance of Apple?
iv) Is fruit instance of GoldenDelicious?
v) Is fruit instance of Macintosh?
vi) Is orange instance of Orange?
vii) Is orange instance of Apple?
viii) Suppose the method makeApple is defined in the Apple class. Can fruit invoke this method? Can Orange invoke this method?
ix) Is the statement Orange P = new Apple() legal?
x) Is the statement Macintosh P = new Apple() legal?
xi) Is the statement Apple P = new Macintosh() legal?

(c) What modifier should you use on a class so that a class in the same package can access it, but a class in a different package cannot access it? 3 0

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