

G. H. Raisoni College of Engineering and Management, Pune.
(An Autonomous Institution Affiliated to Savitribai Phule Pune University)
S.Y B. Tech (Computer Engineering) (Term-III)
Vacation Exam Winter-2020 (2019/2016 Pattern)
Object Oriented Programming (BCOL19202)

[Time:1Hour]

[Max. Marks-60]

COURSE OUTCOMES:

1. Describe the fundamental principles of Object oriented programming.
2. Understand and implement appropriate methods to solve a problem.
3. Adapt the various strengths of object oriented programming concepts to develop suitable application.
4. Analyze and Design solution for real world problems using object oriented concepts.

Instructions to the candidates:

- 1) At the beginning of question/sub question indicates the course outcome related to the question.
- 2) All questions compulsory.
- 3) Assume suitable data, if necessary.

- CO1: a) i) What is data encapsulation? Why it is a main concept of object oriented programming. [2]
- ii) Write a Class to store the names, salary and hours of work per day of 10 employees in a company. Write a program to increase the salary depending on the number of hours of work per day as follows and then print the name of all the employees along with their final salaries for the day. With per day work hours 8 and Salary Rs.2000 as the norm. [8]

Hours of work per day	9	10	≥ 12
Increase in salary(Rs)	125	240	380

Consider 4 employees with Emp1 8 hrs, Emp2 9 hrs and Emp3 10 hrs and Emp4 more than 12 hours

- b) i) What is wrong with the following code: [4]
- ```
#include <iostream.h>
class complex
{
 double r;
 double i;
public: void print(const char *p=0, complex& c);
};
void print(const char *p, complex& c)
{
 if(!p) return;
```

```

 cout<<p<<c.r<<c.i;
 }
 int main
 {
 complex a;
 a.print()
 return 0;
 }

```

ii) Will the inline function be compiled as the inline function always? Justify. [1]

CO2: a) i) Illustrate the concept of function overloading with help of an example. [2]

ii) With the multiple definitions of single function name, what makes them significantly different? [1]

iii) How is matching done in case of overloading functions? Explain with an appropriate example. [2]

b) Overloading and overriding are same in C++. Is the statement correct? Support your answer with proper explanation and C++ program. [5]

c) i) What is a constructor and what are its types? Mention the rules to implement constructor? (3marks) [3]

ii) The following program has some errors. Debug the code. [7]

```

#include <iostream>
using namespace std;

```

```

class Room
{
 int width;
 int length;
 int area;
protected:

```

```

 Room()
 {
 width = 12;
 length = 8;
 }

```

```

 Room(Room &r);
 {
 width = r.width;
 r.length = length;
 area = width * length;
 }

```

```

 void disp()
 {
 cout<< "Area: " << area << "sq.mtrs";
 }
 };

 int main()
 {
 Room objRoom1;
 Room objRoom2(objRoom1);
 Room objRoom3 = objRoom2;
 objRoom3.disp();
 Room objRoom4(12,20);
 }

```

CO3: a) Debug the following code of Inheritance

[10]

```

#include <iostream>
#include <stdio>
using namespace std;
class employee
{
 private: char name[];
 long eno;
 public: void get()
 {
 cout<<"\nenter name:\t";
 cin>>name;
 cout<<"\nenter employee no:\t";
 cin>>eno;
 }
 void put()
 {
 cout>>"\nname:\t";
 cout>>name;
 cout>>"\nemployee no:\t"<<eno;
 cout>>"\nsalary:\t"<<sal;
 }
 private: float sal;
 void getsal()
 {
 cout<<"\nenter salary:\t";
 cin>>sal;
 }
};

class manager:public employee
{
 public: void getdata()
 {
 cout<<"\nenter the details";
 get();
 getsal();
 }
}

```

```

 }
 void put()
 {
 cout<<"\ndisplaying employee details";
 put();
 }
};

```

```

int main()
{
 manager m1,m2;
 cout<<"\nEnter details of manager 1\n";
 m1.getdata();
 cout<<"\nEnter details of manager 2\n";
 m2.getdata();
 cout<<"\n";
 m1.putdata();
 m2.putdata();
 return 0;
}

```

- b) i) What is a friend function? Can declaration of the friend function be done anywhere in the program? [5]  
Write a C++ program with default and parameterized constructor and friend function.

(or)

- c) Debug the following code of files [5]

```

#include<iostream>
#include<fstream>
using namespace std;

```

```

int main()
{

```

```

 char fn[50],ln[50];
 fstream f;
 f.open("one.txt",ios::app);
 cout<<"Enter fname:";
 cin>>fn;
 cout<<endl;
 f<<fn;
 f.close();

```

```

fstream f1;
 f1.open("two.txt",ios::trunc);
 cout<<"Enter lname";
 cin>>ln;
 f1<<ln;
 f1.close();
 fstream f2;
 f.open("one.txt",ios::in);
 f1.open("two.txt",ios::out);
 f2.open("three.txt",ios::out);
 f<<fn;

```



```

 f2<<fn<<"\t";
 cout<<fn;
 f1>>ln;
 f2>>ln;
 cout<<ln;
 f.close();
 f1.close();
 f2.close();
 f2.open("three.txt", ios::app|ios::out|ios::ate);
 f2>>fn;
 f2>>ln;
 cout<<"\n"<<fn<<"\t"<<ln;
 f2.close();
 return 0;
}

```

CO4: a) i) What are iostreams in C++? Mention the objects of iostreams. (2marks) [2]

ii) Write a program to read a list containing item name, item code and cost interactively and produce a three column output as shown below [8]

| Name    | Code  | Cost   |
|---------|-------|--------|
| Turbo C | 1001  | 250.00 |
| -----   | ----- | -----  |

Note: The name and code are left justified and the cost is right justified with a precision of two digits. Trailing zeros should be shown.

(Or)

b) i) Is it wise to use exception handling in C++ programming. Substantiate your answer with proper reasoning. [2]

ii) Write a C++ program to implement exception handling for divide by zero condition. [4]

iii) Debug the following code [4]

```

#include<iostream>
using namespace std;
int main
{
 int value,*ptr;
 ptr=value;
 cout<<"Memory Address before incrementing: ";
 cout<<ptr<<endl;
 ptr++;
 cout<<"Memory Address after incrementing: ";
 cout<<ptr<<<endl;"}

```

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