

Easterh University, Sri Lanka  
Second Examination in Science - First Semester - 2002/2003  
OC 206 -- Java Programming- Theory.



Attempts all questions

Time : 2 Hours

- Q1) (i) Explain briefly, why Java language is popular. (4 marks)
- (ii) (a) List four categories of primitive data types of Java and their names in Java. (4 marks)
- (b) Explain why different data types are necessary. (4 marks)
- (iii) Explain the role of constructors, accessors and modifiers. Under what circumstances do you need each of them. (6 marks)

Q2) (i) Consider the program fragment

```
int sum=0;
for(int i=0;i<=5;i++){
System.out.println("Hello,"+i);
sum+=i;
}
System.out.println("sum="+sum);
```

- (a) Write down the output for the above code. (4 marks)
- (b) Rewrite the above code using while loop. (4 marks)
- (c) Rewrite the above code using do\_while loop (4 marks)
- (ii) One can score marks between 0 and 100 for an exam. Write a method which takes exam marks as an input and returns grade assigned according to the following rule.

Exam score	Grade assigned
90 and more	A
80 - 89	B
70 - 79	C
60 - 69	D
below 60	F

(10 marks)

Q3) (i) The following code defines a class "ComplexNums" together with a constructor.

```
public class ComplexNums {  
    private double x ;  
    private double y ;  
    public ComplexNums (double a, double b) {  
        x=a ;  
        y=b ;  
    }  
}
```

Write the code for the following methods to the above class.

- (a) To print a complex number in the form "x+iy". (3 marks)
- (b) To find the addition of two complex numbers. (4 marks)
- (c) To find the subtraction of two complex numbers. (4 marks)
- (d) To find the multiplication of two complex numbers. (5 marks)

(ii) Construct an application class called "ComplexNumsApp". Create necessary instance objects of ComplexNums and use its methods to compute and print the value of

$$\{(2+3i) + (1+4i)\} * \{2i - (1+i)\}.$$

(14 marks)

Q4) (i) When would you use an abstract class and what should it contain? (6 marks)

- (ii) When would you use an interface?  
Can a class have more than one interface?  
What does an interface contain?

(6 marks)

(iii) Write Java program to display the following:

