RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B. Sc. (General) Degree
Year I Semester II Examination – March/ April 2014

COM 2305 – JAVA PROGRAMMING LANGUAGE

Answer all questions. Time Allowed: Three (3) hours.

Instructions to candidates

- This paper contains three (4) pages including this page.
- Start each question on a new page.
- Clearly state the assumptions if any.
- Calculators not permitted.

1.

a) "Java is a fully Object Oriented Programming Language". Explain? *(03 marks)*

b) Write down how access modifiers support Information Hiding. *(04+03 marks)*

c) The following is a statement of *Tester* class. *TestingClass* and *companyName* are valid class and variable names respectively. Is this statement is legal or illegal? Clarify your answer. *(01+04 marks)*

```
System.out.println(TestingClass.companyName);
```

d) What will be the output of the following code? Justify. *(02+03 marks)*

```
abstract class A{
        abstract void m();
}
class B extends A()
class C extends B{
        void m(){
                System.out.println("L");
        }
        public static void main(String args[]){
                C d =new C();
                d.m();
        }
}
```

2.

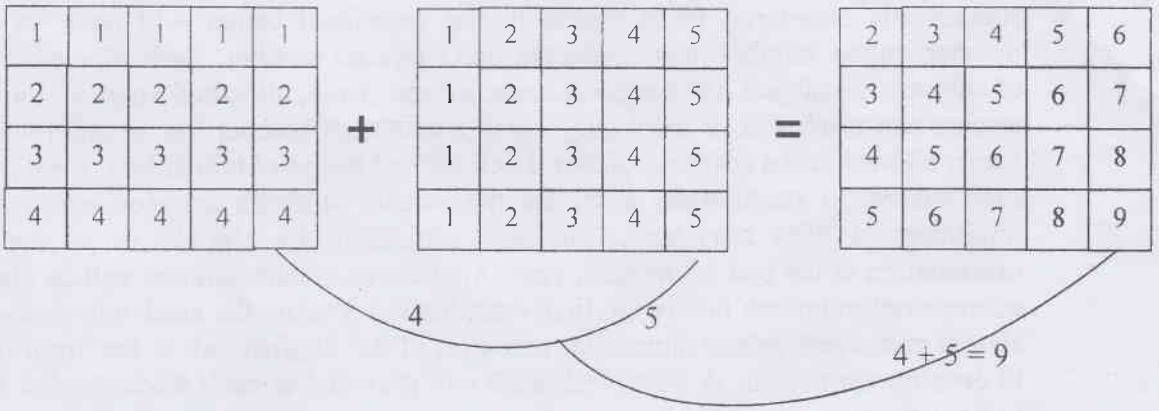
a. Explain why compiler throws an error for the following statement? *(06 marks)*

```
class C {
        public static void main(String args[]){
                int new=2;
                System.out.println(new %2);
        }
}
```

b. Identify five (5) Java keywords from the following list. *(05 marks)*

case, class, compile, do, doubel, error, exception, extends, final, go, imports, include, java, javac, native, pirate, public, elseIf, to, void.

c. Write an algorithm to solve the following matrix calculation. *(9 marks)*



d. The following is an encrypted message. It is encrypted using a simple letter replacement schema and is given in the table bellow. Write an algorithm to decrypt the message. *(10 marks)*

aqwp ofi iwuytg fd jpn5m41

Encrypted Letter	m	q	w	y	o	n	i	u	t	g	d	j	f	a
Actual Letter	d	o	u	b	p	t	n	m	e	r	s	x	i	y

3.

a) What do you mean by "*throwing an exception*"? *(2 marks)*

b) Explain three (03) exception handling methods available in java with suitable examples. *(6 marks)*

c) Write a method with suitable parameters to multiply two integer numbers without using the multiplication (*) sign. *(8 marks)*

d) Propose an algorithm to return the number of sentences in a text file. Make possible assumptions. *(9 marks)*

4. A vocational training center offers variety of vocational courses which will lead to a diploma or a degree in vocational studies. For a new batch of students, applications are invited for each course during January each year. Applicants can apply for any of the diploma or degree course according to their academic qualifications. A student who has successfully registered for a course in the vocational center will have an admission number, course number, name, address, and a contact number. Each course has a number of subjects. A subject has a subject code, subject name, allocated hours and a teacher. A teacher can teach one or more subjects in a course. A teacher has an employee number, name, address and a contact number. Each student has to obtain at least a simple pass for each subject to successfully complete the course. Students are required to maintain a minimum of 75% attendance for each subject to be eligible to sit for the final examination at the end of the each year. Attendance of each student will be check by the administration branch before the final examination. During the academic period, students should participate in extracurricular activities of the English unit at the vocational center to develop their skills. A membership ID will provided to each students after registering in English unit.

Suppose you are a software engineer and you are asked to develop an online software solution for the vocational training center.

a) Identify possible classes for the software system. *(5 marks)*

b) Propose possible relationships between the classes identified in above (a). *(5 marks)*

c) Write complete classes with suitable instances. *(15 marks)*