RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B. Sc. (General) Degree in Applied Sciences
Year I Semester II Examination – April/May 2015

COM 1306 – JAVA PROGRAMMING LANGUAGE

Answer all questions.   Time Allowed: Two (2) hours.

1.

   a) "It is not possible to find a Java program without any Object Oriented Programming concepts". Explain?   *(03 marks)*

   b) What are Java Keywords? Explain using your own words.   *(02 marks)*

   c) Explain how primitive data types differ from reference data types.   *(05 marks)*

   d) Create five (05) valid variable names using following characters.   *(05 marks)*

   $$\#, \ @, \ 1, \ *, \ (,), \ +, \ \$, \ /, \ -, \ \backslash, \ \_, \ \%, \ \&$$

   e) Variables can be categorized according to their life time. Describe each type with suitable examples.   *(07 marks)*

   f) Propose good programming practices a programmer should follow during programming.   *(03 marks)*

   (25 marks)

2. An important characteristic of Object Oriented Paradigm is Encapsulation using classes.

   a. "No encapsulation could be found find without using access modifiers". Do you agree? State your reasons.   *(03 marks)*

   b. Describe "Method Overloading" and "Method Overriding".   *(06 marks)*

   c. Compare Abstract class and Interface.   *(06 marks)*

d. Assume that the following program is free from compile and runtime errors. What will be the output of this program?

```java
class Puzzle
{
    public static void main(String ar[])
    {
        int a=0;
        while(a<4)
        {
            System.out.print("a");
            if (a<1)
            {
                System.out.print(" ");
            }
            System.out.print("n");
            if (a>1)
            {
                System.out.print(" oyster");
                a=a+2;
            }
            if (a==1)
            {
                System.out.print("noys");
            }
            if (a<1)
            {
                System.out.print("oise");
            }
            System.out.println("");
            a=a+1;
        }
    }
}
```

(04 marks)

e. The Following lists show a program that was successfully compiled and its output. The output indicates that during the compilation another class also has been compiled. Write down a possible code for this other class.

```java
public class TestCDPlayer
{
    public static void main(String [] args)
    {
        CDPlayer t = new CDPlayer();
        t.canBurn = true;
        t.playCD();
        if (t.canBurn == true)
        {
            t.burnCD();
        }
    }
}
```

Output is,

```
C:\Users>user>java TestCDPlayer
CD Playing
CD Burning
```

(06 marks)

(25 marks)

3. Following figure represents a runtime error message of a java program.

```
C:\Users\user\Desktop>java TestCDPlayer
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 10
        at TestCDPlayer.main(TestCDPlayer.java:19)
```

a) What will be the reason behind this message? Briefly explain.   *(05 marks)*

b) Explain how you would debug (fix) this error.   *(06 marks)*

c) "Implicit Casting may lead to data loss." Do you agree with this statement. Justify your answer.   *(05 marks)*

d) Propose an algorithm to find telephone numbers in a given text file. Make possible assumptions if any.   *(09 marks)*

(25 marks)

4. ABC Library allows users to access huge amount of books as a hard copy and soft copy. Following are details of few books in a library.

ISBN No	Name	Medium	Price (Rs.)	Size
0-07-026498-8	SCJP Java 1.6	English	1675.00	A4
81-8404-221-3	OO Analysis & Designing	English	1550.00	A4
0-195670725-0	Madoldoowa	Sinhala	730.00	A5
978-955-10546	Ulaham	Tamil	650.00	A5
3045-77064-16	C++	English	950.00	A4

Each book has a "Class No" and a "Reference No" after successful registration process. If the same book is updated as an e-book then that book will only have a "Directory No" and "E-Book No".

a) Sketch a suitable class structure.   *(5 marks)*

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

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

(25 marks)

(Total 100 marks)

*****End of the paper*****