#### Introduction to Java Programming

**(1)** List five Java keywords. What is the purpose of each if these keywords?

**(2)** Write a definition for a method named **GrossIncome** using the following description.

*Method Name* : **GrossIncome**

*Method Purpose* : computes the gross income of an employee

*Receives* : **numHours** ( integer ) and **wage** ( real )

*Returns* : employee's gross income ( real )

*Algorithm* :

1. Compute the employee's gross income by multiplying the number of hours by $ 12.00 .

2. Computer the gross income by adding a bonus of $ 10.00 to the gross income and return this value.

**(3)** Match the phrase on the left with the correct description on the right.

\_\_\_ constants (a) data that travels from the user to the machine

\_\_\_ **double** (b) data that travels from the machine to the user

\_\_\_ Java Applet Program (c) caused by an error in Java translation

\_\_\_ input (d) Java arithmetic data type often stored approximately

\_\_\_ **int** (e) values that may not be modified during execution

\_\_\_ logic error (f) caused by an error in your algorithm

\_\_\_ Java Application Program (g) a program that can be executed within a Web browser

\_\_\_ output (h) a program that should not be executed within a Web browser

\_\_\_ syntax error (i) Java arithmetic data type always stored exactly

\_\_\_ variables (j) values that may be modified during execution

**(4)** Match the components of the software development process with the appropriate description.

\_\_\_ analysis (a) implementing an algorithm in a language such as Java

\_\_\_ algorithmic design (b) checking that a solution is correct

\_\_\_ coding (c) designing a step by step problem solution that terminates

\_\_\_ compiler (d) conversion of the high level language such as Java to bytecode

\_\_\_ interpreter (e) identifying data objects, operations and resulting in an algorithm

\_\_\_ results (e) execution of the bytecode to discover logic errors

**(5)** Use the variable x declared below. Declare an appropriate object of type Scanner to read an integer value from the keyboard and store the result into the variable x.

No additional values or **main()** method are necessary.

**import java.util.Scanner;**

**int x;**

**// code the Scanner declarations and input statements below**

**(6)** Evaluate the following Java expression. **25 - 9 \* 2 - 3 / 7**

**(7)** Given the following declaration, what is the value of the **String** expression

**s.charAt(3)** ?

**String s = new String("pqrstwxyz");**

**(8)** Indicate 5 correct Java identifiers in the following.

(a) **r2d2**

(b) **real**

(c) **compile+execute**

(d) **CAT\_SCAN**

(e) **double**

(f) **-Sum**

(g) **appreci8**

(h) **3kings**

(i) **J++**

(j) **feet\_per\_second**

**(9)** Use the class definition and declarations shown below which pertain to a class called Whatsit.

public class Whatsit {

private int myM;

private char myZ;

public Whatsit() { // to be implemented later }

public char GetZ() { return myZ; }

public void SetM(int R) { myM = R; }

}

Whatsit Gamma = new Whatsit();

**Mix and Match**

\_\_\_\_\_ new (a) keyword that restricts users access to fields

\_\_\_\_\_ Gamma (b) operation used to invoke a constructor

\_\_\_\_\_ Gamma.GetZ (c) an instance of the class Whatsit

\_\_\_\_\_ Gamma.SetM (d) a mutator method that assigns a value to a data attribute

\_\_\_\_\_ myZ (e) the class name

\_\_\_\_\_ private (f) the name of a source file for the class declaration

\_\_\_\_\_ public (g) an accessor method that returns the value of a data attribute

\_\_\_\_\_ Whatsit (h) a data attribute

\_\_\_\_\_ Whatsit() (i) constructor method heading

\_\_\_\_\_ Whatsit.java (j) keyword that allows users access to fields

**(10)** In electronics, inductive reactance *X L* is proportional to the signal frequency *f* and the inductance *L* , according to the following formula.

*X L* = 2 π *f L*

Write the complete code of a program which will display the inductive reactance, in Ohms, of an AC circuit. The user’s name, the frequency and the inductance, in Henries, should be entered into the program via the keyboard. The user’s name ( indented ) and the inductive reactance are to be displayed to the user. Also, a message is to be displayed to the user when the inductive reactance falls below an amount of 50 Ω when the frequency exceeds 2,000 cycles per second ( Hz ) .