A10.2-R3: INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING THROUGH JAVA

NOTE:

1. There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.

2. **PART ONE** is to be answered in the **TEAR-OFF ANSWER SHEET** only, attached to the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book.

3. Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the answer sheet for **PART ONE** is returned. However, candidates, who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the answer sheet for **PART ONE**.

TOTAL TIME: 3 HOURS **TOTAL MARKS: 100**

(PART ONE – 40; PART TWO – 60)

PART ONE
(Answer all the questions)

1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "tear-off" answer sheet attached to the question paper, following instructions therein. (1 x 10)

1.1 A colored image can be converted into a grayscale by using

A) CropImageFilter
B) RGBImageFilter
C) ImageConsumer
A) ImageProducer

1.2
```
void printOut( int I ) {
      if (I==0) return;
      for(int i=I;i>0;i--) {
            System.out.println("Line " + i);
      }
      printOut(I-1);
}
```
What value should be passed to the method printOut, shown above, so that ten lines will be printed?

A) 2
B) 3
C) 4
D) 5

1.3 If not assigned a value, a variable of type *char* has which default value?

A) '\u0001'
B) '\uffff'
C) " " (space)
D) '\u0000'

1.4 When is an object eligible for garbage collection?

A) When an object becomes unreachable by any code

B) When the “finalize” method is called on the object

C) When an object goes out of scope

D) When the system runs out of virtual memory

1.5 What would be the output from the following code?

```
public class Thread373 implements Runnable {
      boolean flag = false;
      public void start() {
          if (!flag)
              System.out.println("Hello World");
      }
      public static void main(String[] args) {
          Thread373 t373 = new Thread373();
          t373.start();
      }
}
```

A) Compilation succeeds, Hello World is printed out.

B) Compilation succeeds, nothing is printed out.

C) Compilation fails.

D) Execute with warnings.

1.6 If you create a TextField with a constructor to set it to occupy 5 columns, what difference will it make if you use it with a proportional font (i.e. Times Roman) or a fixed pitch typewriter style font (Courier).

A) With a fixed font, you will see 5 characters, with a proportional it will depend on the width of the characters.

B) With a fixed font, you will see 5 characters; with a proportional it will cause the field to expand to fit the text.

C) The columns setting do not affect the number of characters displayed.

D) Both will show exactly 5 characters.

1.7 A class needs to be created that will store unique object elements. The elements need not be sorted but they must be unique. What interface might be most suitable to meet this need?

A) Set

B) List

C) Map

D) Vector

1.8 Using the File class the task can be performed is

A) Change the current directory

B) Return the name of the parent directory

C) Delete a file

D) Finds whether a file contains text or binary information

1.9 What will be output by the following line?

```
System.out.println(Math.floor(-2.1));
```

A) -2
B) 2.0
C) -3
D) -3.0

1.10 Which of the following wrapper classes can not take a “String” in constructor?
A) Boolean
B) Integer
C) Double
D) Character

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the “tear-off” sheet attached to the question paper, following instructions therein. (1 x 10)

2.1 An instance of class java.awt.panel cannot be added to another instance of the same class.
2.2 Constructor methods allow class objects to be created with fields initialized to values as determined by the methods' parameters.
2.3 The modulus operator (%) in Java can be used only with variables of integer type.
2.4 A static method can refer to any instance variables of the class.
2.5 *javac* and *java* command are case sensitive.
2.6 If “getParameter” method of an instance of java.applet, Applet class returns null, then an exception of type a NullPointerException is thrown.
2.7 Multicasting means broadcasting DatagramPackets to every host on the Internet.
2.8 A method's name in java can be an unlimited-length sequence of Unicode letters and digits, beginning with a letter, the dollar sign "$", or the underscore character "_".
2.9 *null* may be assigned to any variable, except the variables of primitive types.
2.10 If multiple listeners are added to a component, the events will be processed for all but with no guarantee in the order.

3. Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the "tear-off" answer sheet attached to the question paper, following instructions therein. (1 x 10)

X		Y	
3.1	In java.awt package the setBackground() method is part of the	**A.**	System class
3.2	Specifying a port that is an invalid port number when creating ServerSocket results in a	**B.**	java.lang
3.3	The current security manager is set by the setSecurityManager method is of	**C.**	super
3.4	The hierarchy of exception classes commence from Throwable class which is the base class in	**D.**	packages
3.5	The API is a large collection of ready-made software components that provide many useful capabilities. It is grouped into libraries of related classes and interfaces; these libraries are known as	**E.**	Component class
3.6	If your method overrides one of its superclass's methods, you can invoke the overridden method through the use of the keyword	**F.**	interface
3.7	Use long data type when you need a range of values wider than those provided by	**G.**	BindException.
3.8	A collection of methods with no implementation is called a(n)	**H.**	int
3.9	Byte code is an intermediary language between Java source and the	**I.**	float
3.10	Class that is used to create multicast socket is	**J.**	host system
		K.	this
		L.	DatagramSocket
		M.	the host system
		N	java.util

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Enter your choice in the "tear-off" answer sheet attached to the question paper, following instructions therein. (1 x 10)

A.	ResultSet	**B.**	static	**C.**	Properties
D.	Statement	**E.**	abstract	**F.**	reference
G.	interface	**H.**	anchor	**I.**	valueOf
J.	this	**K.**	–(minus)	**L.**	Locale

4.1 The System class provides access to the native operating system's environment through the use of _____ methods.

4.2 Class String provides _____ static method that takes an argument of any type and converts the argument to a String object.

4.3 The _____ flag causes output to be left justified in a field.

4.4 A(n) _____ object is used to submit a query to a database.

4.5 The GridBagConraints's instance variable _____ is set to CENTER, by default for component.

4.6 The most common reason for using the _____ keyword is because a field is shadowed by a method or constructor parameter.

4.7 In the Java programming language, a(n) _____ is a reference type, similar to a class that can contain only constants, method signatures, and nested types.

4.8 The Java platform itself uses a(n) _____ object to maintain its own configuration.

4.9 A(n) _____ object is an identifier for a particular combination of language and region.

4.10 Assignment to an interface type variable from a(n) _____ type, implements that interface is possible without a cast.

PART TWO

(Answer any **FOUR** questions)

5.

a) Write a program to print factorial of a given number.

b) The Java programming language allows you to define a class within another class. Explain nested classes in java.

(10+5)

6.

a) An exception is an event, which occurs during the execution of a program that disrupts the normal flow of the program's instructions. Explain different kinds of exceptions in java.

b) Explain various steps to create native methods in java.

c) Real-world objects share two characteristics: They all have state and behaviour. Which are the benefits of Bundling code into individual software objects?

(3+8+4)

7.

a) Illustrate constructors and destructors with examples.

b) Write a java program to implement Queue.

c) The URL class provides several methods that let you query URL objects. Explain these methods.

(2+6+7)

8.

a) JDBC interfaces can be used to find out the information about database and table. Explain methods of ResultSetMetaData interface.

b) In java classes, constructors, methods and fields are regulated using access modifiers. What is access modifier and explain various access modifiers available in java.

c) Explain, how inter thread communication is possible in java multithreaded environments?

(7+5+3)

9. Answer **any three** of the following:

a) Distinguish between abstract class and interface illustrate with example.

b) Explain “Write once and run anywhere” nature of Java.

c) The Java Archive (JAR) file format enables you to bundle multiple files into a single archive file. What are the benefits of making JAR file?

d) Each top-level container in swing has a content pane that contains (directly or indirectly) the visible components in that top-level container’s GUI. Explain different type of panes.

(3x5)