

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. (1x10)
 - 1.1. Which command is used to compile a Java source file?
 - A) compilejava
 - B) javacompiler
 - C) javac
 - D) javacmp
 - 1.2. Which of the following is not a reserved keywords in Java?
 - A) finally
 - B) volatile
 - C) abstract
 - D) that
 - 1.3. Java allows programmers to develop the following:
 - A) Applets, applications and Servlets.
 - B) Applets and applications.
 - C) Applets, applications, Servlets, JavaBeans and Distributed objects.
 - D) None of the above.
 - 1.4. The advantages of abstraction is that it:
 - A) Focuses on the problem at hand.
 - B) Identifies the essential characteristics and the action required.
 - C) Helps eliminate redundant detail.
 - D) All of the above.
 - 1.5. The process of hiding the attributes, methods or details of implementation is known as .
 - A) Polymorphism
 - B) Data Abstraction
 - C) Inheritance
 - D) Data Encapsulation

- 1.6. An interface has methods that are _____.
- A) final
 - B) static
 - C) abstract
 - D) none of the above
- 1.7. Attempting to access a character that is outside the bounds of a StringBuffer results in a
- A) ArrayIndexOutOfBoundsException
 - B) StringOverflowException
 - C) StringException
 - D) StringIndexOutOfBoundsException
- 1.8. Methods defined by Math class are
- A) static double random()
 - B) static double sin(double arg)
 - C) static double toDegrees(double angle)
 - D) All of the above
- 1.9. Consider the following code snippet
- ```
String s1=new String("JComponent");
System.out.println(s1.length());
```
- What is printed?
- A) 9
  - B) 10
  - C) JComponent
  - D) s1
- 1.10. Which of the following is not a byte stream class?
- A) FilterInputStream
  - B) PipedOutputStream
  - C) InputStreamReader
  - D) RandomAccessFile

**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. (1x10)**

- 2.1 A final class cannot be extended.
- 2.2 The Object class is the highest superclass of Java.
- 2.3 The switch statement does not require a break.
- 2.4 The new operator creates a single instance named class and returns a reference to that object.
- 2.5 Boolean values can be cast into any other primitive type.
- 2.6 Java memory management mechanism garbage collects objects which are no longer referenced.
- 2.7 Java compiler stores the .class files in the path specified in CLASSPATH.
- 2.8 It is necessary to implement all the methods of an interface while implementing the interface.
- 2.9 The suspend() method is used to terminate a thread.
- 2.10 The run() method should exist in classes created as subclass of thread.

**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. (1x10)**

| X    |                | Y         |                                                                                                                     |
|------|----------------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 3.1  | join()         | <b>A.</b> | indicates what exceptions may be thrown by a method.                                                                |
| 3.2  | Object Streams | <b>B.</b> | is a template for multiple objects with similar features.                                                           |
| 3.3  | throws         | <b>C.</b> | mutable string                                                                                                      |
| 3.4  | Class          | <b>D.</b> | Methods have the same signature and the subclass definition is used.                                                |
| 3.5  | StringBuffer   | <b>E.</b> | methods waits for the threads to die.                                                                               |
| 3.6  | ImageConsumer  | <b>F.</b> | method used to determine the class of an object.                                                                    |
| 3.7  | Persistence    | <b>G.</b> | Java Foundation Classes                                                                                             |
| 3.8  | getClass()     | <b>H.</b> | Method for receiving image created by an ImageProducer.                                                             |
| 3.9  | Overridden     | <b>I.</b> | Methods have a same signature but either a different number of parameters or different types in the parameter list. |
| 3.10 | Swing          | <b>J.</b> | handle binary I/O of objects                                                                                        |
|      |                | <b>K.</b> | creates an exception                                                                                                |
|      |                | <b>L.</b> | is the ability of an object to store data beyond the lifetime of an object                                          |
|      |                | <b>M.</b> | read-only string                                                                                                    |
|      |                | <b>N.</b> | handle I/O of raw binary data                                                                                       |

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. (1x10)

|           |               |           |                  |           |               |
|-----------|---------------|-----------|------------------|-----------|---------------|
| <b>A.</b> | Socket        | <b>B.</b> | Bytecode         | <b>C.</b> | Package       |
| <b>D.</b> | URLConnection | <b>E.</b> | Coalescing       | <b>F.</b> | static        |
| <b>G.</b> | Interface     | <b>H.</b> | Deadlock         | <b>I.</b> | new           |
| <b>J.</b> | URLEncoder    | <b>K.</b> | Applet.destroy() | <b>L.</b> | final         |
| <b>M.</b> | Dot           | <b>N.</b> | Instance         | <b>O.</b> | Encapsulation |

- 4.1 Java code is compiled into a platform-neutral machine code, which is called Java \_\_\_\_\_.
- 4.2 \_\_\_\_\_ is the ability of an object to be a container for related properties and methods.
- 4.3 The class used for converting text strings to a suitable form usable as part of an URL is \_\_\_\_\_.
- 4.4 Variables defined as \_\_\_\_\_ are shared among the objects of a class.
- 4.5 Client and Servers establish connections via methods of \_\_\_\_\_ class.
- 4.6 The behavior of an object is represented by \_\_\_\_\_ methods.
- 4.7 If we have an active HTTP connection to the web, the \_\_\_\_\_ class encapsulates it.
- 4.8 A \_\_\_\_\_ is used to separate the hierarchy of the class in an ‘import’ statement.
- 4.9 When two threads are waiting on each other and cannot proceed the program is said to be in \_\_\_\_\_.
- 4.10 \_\_\_\_\_ operator is used to create a single instance of a named class.

**PART TWO**  
(Answer any **FOUR** questions)

- 5.**
- a) What are the three OOPs principles? Define them.
  - b) What is the difference between a constructor and a method?
  - c) What is the difference between 'Exception' and 'Error' in java?
  - d) What are inner classes? Explain.
  - e) What is hash table? How does it work?

**(5x3)**

- 6.**
- a) Split the following classes into three packages, as listed in the table below.

| Class Name | Package Name  |
|------------|---------------|
| Server     | mygame.server |
| Utilities  | mygame.shared |
| Client     | mygame.client |

- i) What line of code will you need to add to each source file to put each class in the right package?
  - ii) To adhere to the directory structure, what subdirectories must you create? Which subdirectory does each source file go in?
  - iii) Write the import statement to use server class in another Java program.
- b) Write a Java program to convert the contents of a text file to uppercase.
  - c) Explain finalize() method.

**(5+7+3)**

- 7.**
- a) What is JDBC and what are the steps required for JDBC connection? Write steps for creating and executing a SQL statement to join data from two tables.
  - b) How Byte Streams are different from Character Streams?
  - c) What is Vector? How to swap two elements in a vector?

**(5+5+5)**

- 8.**
- a) Explain with example, how to create and run an Applet?
  - b) Explain any two layout managers.
  - c) Write a recursive method in Java to compute n<sup>th</sup> term of Fibonacci series.

**(5+6+4)**

- 9.** Explain any **three** of the following:
- a) java.net.Socket & java.net.ServerSocket class
  - b) StringTokenizer
  - c) Checked and UnChecked Exception
  - d) Multithreading
  - e) Dynamic Method Dispatch

**(5x3)**