

## B2.51-R4: INTRODUCTION TO OBJECT ORIENTED PROGRAMMING THROUGH JAVA

अवधि: 03 घंटे  
DURATION: 03 Hours

अधिकतम अंक: 100  
MAXIMUM MARKS: 100

ओएमआर शीट सं.:					
OMR Sheet No.:					

रोल नं.:					
Roll No.:					

उत्तर-पुस्तिका सं.:					
Answer Sheet No.:					

परीक्षार्थी का नाम: \_\_\_\_\_; परीक्षार्थी के हस्ताक्षर: \_\_\_\_\_  
Name of Candidate: \_\_\_\_\_; Signature of candidate: \_\_\_\_\_

### परीक्षार्थियों के लिए निर्देश:

### Instructions for Candidate:

कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यान पूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर कर सकता है।	Question Paper is in English language. Candidate can answer in English language only.
इस मॉड्यूल/पेपर के दो भाग हैं। भाग एक में चार प्रश्न और भाग दो में पाँच प्रश्न हैं।	There are <b>TWO PARTS</b> in this Module/Paper. <b>PART ONE</b> contains <b>FOUR</b> questions and <b>PART TWO</b> contains <b>FIVE</b> questions.
भाग एक "वैकल्पिक" प्रकार का है जिसके कुल अंक 40 हैं तथा भाग दो, "व्यक्तिपरक" प्रकार है और इसके कुल अंक 60 हैं।	<b>PART ONE</b> is Objective type and carries 40 Marks. <b>PART TWO</b> is subjective type and carries 60 Marks.
भाग एक के उत्तर, इस प्रश्न-पत्र के साथ दी गई ओएमआर उत्तर-पुस्तिका पर, उसमें दिये गए अनुदेशों के अनुसार ही दिये जाने हैं। भाग दो की उत्तर-पुस्तिका में भाग एक के उत्तर नहीं दिये जाने चाहिए।	<b>PART ONE</b> is to be answered in the <b>OMR ANSWER SHEET</b> only, supplied with the question paper, as per the instructions contained therein. <b>PART ONE</b> is <b>NOT</b> to be answered in the answer book for <b>PART TWO</b> .
भाग एक के लिए अधिकतम समय सीमा एक घण्टा निर्धारित की गई है। भाग दो की उत्तर-पुस्तिका, भाग एक की उत्तर-पुस्तिका जमा कराने के पश्चात दी जाएगी। तथापि, निर्धारित एक घंटे से पहले भाग एक पूरा करने वाले परीक्षार्थी भाग एक की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, भाग दो की उत्तर-पुस्तिका ले सकते हैं।	Maximum time allotted for <b>PART ONE</b> is <b>ONE HOUR</b> . Answer book for <b>PART TWO</b> will be supplied at the table when the answer sheet for <b>PART ONE</b> is returned. However, candidates who complete <b>PART ONE</b> earlier than one hour, can collect the answer book for <b>PART TWO</b> immediately after handing over the answer sheet for <b>PART ONE</b> .
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना अथवा अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हाल नहीं छोड़ सकता है। ऐसा नहीं करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।	Candidate cannot leave the examination hall/room without signing on the attendance sheet or handing over his Answer sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.
प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात एवं उत्तर देने से पहले उम्मीदवार यह जाँच कर यह सुनिश्चित कर ले कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question booklet is complete in all respect.

जब तक आपसे कहा न जाए तब तक प्रश्न-पुस्तिका न खोलें।

**DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

**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 "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

1.1 Which of the following statements are true?  
A) Constructors cannot be inherited  
B) There is an<init> method created implicitly for each constructors  
C) Default constructors will not be provided if a class declares a constructor for itself.  
D) All of the options

1.2 Which statement is true about a static nested class?  
A) An instance of the enclosing class is required to instantiate it.  
B) It does not have access to non-static members of the enclosing class.  
C) It must have static variables and methods only.  
D) None of the options

1.3 If the assert statement returns false, what is thrown?  
A) Exception  
B) Assert  
C) Assertion  
D) AssertionError

1.4 For showing scenarios, which one of the following OOAD artifacts is the MOST useful?  
A) Interaction Diagrams  
B) Activity Diagrams  
C) Use Cases  
D) State Diagrams

1.5 What is the output when you try to compile and run the following?

```
Class Demo  
{  
    int x=20;  
    Demo()  
    {  
        x=40;  
    }  
    public static void main(String args[])  
    {  
        Demo d=new Demo();  
        System.out.println(d.x);  
    }  
}
```

A) Compile time error  
B) Run Time error  
C) Compiles and prints " 20"  
D) Compiles and prints " 40"

1.6 Which of these assignments is invalid?  
A) short s = 48;  
B) float f = 4.3;  
C) double d = 4.3;  
D) int l = '1';

1.7 Which keyword is used for accessing the features of a package?

A) export  
B) import  
C) package  
D) extends

1.8 Identify the modifier of a method that makes the method available to all classes in the same package and to all the subclasses of this class.

A) private  
B) default  
C) protected  
D) public

1.9 For showing detailed design of procedures, which one of the following OOAD artifacts is the MOST useful?

A) Interaction Diagrams  
B) Activity Diagrams  
C) Package Diagrams  
D) State Diagrams

1.10 Identify the correct sequence for the following?

1) class x{  
2) package y;  
3) import a.b;

A) 1, 2, 3  
B) 2, 3, 1  
C) 3, 2, 1  
D) 3, 1, 2

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

2.1 class diagram, object diagram & component diagram are all static diagrams.

2.2 start() method gets automatically called when a thread is executed.

2.3 Declaring a method synchronized guarantees that deadlock cannot occur.

2.4 Static methods can be invoked without creating an object of the class.

2.5 Generalization is relationships specified in the class when one entity contains another.

2.6 It is perfectly legal to assign a subclass object to a superclass reference.

2.7 You can modify the value of a variable defined in an interface in the inherited class.

2.8 The expression (x==y&& a<b) is true if either x==y is true or a<b is true.

2.9 Activity diagrams can be used while representing complex conditional logic.

2.10 Interaction models help us to Model computations and workflows.

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 “OMR” answer sheet supplied with the question paper, following instructions therein. (1x10)

X		Y	
3.1	new keyword	A.	Stack Trace
3.2	Refers to current object	B.	super
3.3	Record of active frames generated by the execution of a program	C.	Final
3.4	Lightweight process	D.	Static initializer
3.5	Strict type checking at compile time	E.	this
3.6	Resolving method call at compile time	F.	Runnable
3.7	De-allocation of memory allocated	G.	Instance methods
3.8	method implementation that should not be changed	H.	Generics
3.9	Used for Thread Creation	I.	Garbage collection
3.10	Provides initial values to instance variables	J.	Early binding
		K.	Memory Allocation
		L.	Threads
		M.	Constructors

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the “OMR” answer sheet supplied with the question paper, following instructions therein. (1x10)

A.	Throwable	B.	Prepared	C.	Local
D.	Finalize	E.	Interrupted	F.	Overriding
G.	Object	H.	Overloading	I.	Collaboration Diagrams
J.	Sleep	K.	Update	L.	static
M.	java.lang				

- 4.1 \_\_\_\_\_ is the super class of all the classes in java.  
 4.2 \_\_\_\_\_ package gets imported by default in all java programs.  
 4.3 Parent class of all exception and error in java is \_\_\_\_\_.  
 4.4 Thread.sleep() method throws \_\_\_\_\_ Exception.  
 4.5 \_\_\_\_\_ method is invoked when we try to repaint an applet.  
 4.6 \_\_\_\_\_ Statement represent precompiled SQL statement used to efficiently execute this statement multiple times.  
 4.7 \_\_\_\_\_ highlights the roles each object plays in an interaction model.  
 4.8 public, protected, private access specifiers cannot be applied to \_\_\_\_\_ variables.  
 4.9 \_\_\_\_\_ method is called when there are no further references to an object and it is no longer needed.  
 4.10 Method with same name and signature in both super class and subclass \_\_\_\_\_.

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

- 5.**
- a) What are the benefits of a jar file? Write all the steps to create a jar file.
  - b) What is an abstract class? Can abstract classes have constructors? Explain it with the help of a sample program. How is it different from Interfaces?

**(7+8)**

- 6.**
- a) Explain what are Threads? Also explain all the possible ways of creating Threads in java along with their states? Support your explanation with the help of a program.
  - b) "String in java are immutable." Comment.
  - c) Create an Applet to display the String "My First Applet" painted on the applet.

**(8+3+4)**

- 7.**
- a) Explain static keyword with the help of an example.
  - b) Create a User Defined Exception named CheckArgument to check the number of arguments passed through Command Line. If the number of arguments is less than five, throw the CheckArgument exception else print the addition of all the five numbers.
  - c) Explain all steps required to Connect to Database and retrieve data from it using JDBC?

**(5+5+5)**

- 8.**
- a) Explain the difference between Conversion and casting with the help of an example?
  - b) Write a Java program to displays X and Y coordinates of mouse on a applet even while the mouse is moving using Listener interfaces.
  - c) Explain the difference between 'Extend' and 'Include' in use cases with the help of an example?

**(3+7+5)**

- 9.**
- a) Write a Java Program to display the contents of a file on standard output using byte stream classes?
  - b) What are the most common ways of achieving Polymorphism in Java? Is Operator Overloading allowed in Java? Can you highlight operators which are already overloaded in java?
  - c) Illustrate the difference between the two:
    - i) Inheritance Vs Aggregation
    - ii) super Vs this
    - iii) overriding Vs shadowing

**(9+3+3)**

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