

## A10.1-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:

Name of Candidate: \_\_\_\_\_; Signature of candidate: \_\_\_\_\_

परीक्षार्थी के हस्ताक्षर:

### 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 दे 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 एवं 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 and 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 one of the following will declare an array and initialize it with five numbers?

- A) Array a = new Array(5);
- B) int [ ] a = {23, 22, 21, 20, 19};
- C) int a [ ] = new int[5];
- D) int [5] array;

1.2 Which is a valid keyword in Java?

- A) interface
- B) string
- C) float
- D) unsigned

1.3 Which two statements are equivalent?

- i) 16\*4
- ii) 16>>2
- iii) 16/2^2
- iv) 16>>>2
- A) i) and ii)
- B) ii) and iv)
- C) iii) and iv)
- D) i) and iii)

1.4 Which class cannot be a subclass in Java?

- A) abstract class
- B) parent class
- C) final class
- D) none of the above

1.5 Program which executes applet is known as

- A) Applet engine
- B) Virtual machine
- C) JVM
- D) None of the above

1.6 The JDBC-ODBC bridge is

- A) Multithreaded
- B) Single threaded
- C) Both of the above
- D) None of the above

1.7 Object which can store group of other objects is called

- A) Collection object
- B) Java object
- C) Package
- D) Wrapper

1.8 Which function is static and synchronized in JDBC API?

- A) executeQuery()
- B) executeUpdate()
- C) getConnection()
- D) prepareCall()

1.9 StringBuffer s1 = new StringBuffer ("abcdef");  
System.out.println (s1.length());  
What is the output of the above println function?

- A) 6
- B) 7
- C) 20
- D) displays error message

1.10 Which one of the following is the valid declaration of an applet?

- A) public class MyApplet extends java.applet.Applet {
- B) public Applet My Applet {
- C) public class MyApplet extends applet implements Runnable {
- D) public class MyApplet extends java.applet.Applet {

**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 A class can inherit constructors of its own super class.

2.2 Final methods cannot be overridden but overloaded.

2.3 Overloaded methods must have the same return types.

2.4 All variables are static and methods are public if interface is defined public.

2.5 String s1 = "abcd\nefgh";  
System.out.println(s1);  
The above fraction code prints the output in two different lines.

2.6 It is a syntax error to catch the same type of exception in two different catch blocks associated with a particular try block?

2.7 The method finalize() is called when an object goes out of scope and is no longer needed.

2.8 All Applets must import java.applet and java.awt.

2.9 The method main() is called by the JVM even before the instantiation of the class hence it is declared as static.

2.10 An interface can implement another interface.

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	Return type of a constructor is	A.	This
3.2	A library of classes is	B.	Objects
3.3	Encapsulation may also be called as	C.	Select statements
3.4	Reference to the current object	D.	Exception handling
3.5	Class variable	E.	Package
3.6	Finally is used with	F.	Final
3.7	Arrays are	G.	String Buffer
3.8	Abstract class may not be declared as	H.	Object references
3.9	executeQuery() is meant for	I.	Class object
3.10	Immutable object	J.	Static
		K.	String
		L.	Data hiding
		M.	Void

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.	Properties	B.	Class	C.	Exception
D.	Serializable	E.	Interaction	F.	Swing
G.	Null	H.	Character	I.	Utility
J.	String	K.	Length	L.	Bit
M.	Matcher				

- 4.1 Java has two broad categories of streams, byte streams and \_\_\_\_\_ streams.
- 4.2 ObjectInputStream and ObjectOutputStream only work with objects that implement an interface named \_\_\_\_\_.
- 4.3 \_\_\_\_\_ is the primary Java GUI widget toolkit.
- 4.4 Every array object has an instance variable called \_\_\_\_\_ that tells how many elements are in the array.
- 4.5 Button, Checkbox and Label are subclasses of \_\_\_\_\_ class.
- 4.6 \_\_\_\_\_ represent structural features of a class.
- 4.7 \_\_\_\_\_ is an object that is generated when a run time error occurs.
- 4.8 Pattern and \_\_\_\_\_ are the classes that support regular expression processing.
- 4.9 Sequence diagrams and collaboration diagrams are known collectively as \_\_\_\_\_ diagrams.
- 4.10 The default value of a String type is \_\_\_\_\_.

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

**5.**

- a) What is ResultSet? How can you view and update a ResultSet?
- b) Briefly discuss exception handling in Java.
- c) Write a program to create and display a vector of all the states of India. The vector should expand dynamically whenever information of any new state is entered.

**(6+5+4)**

**6.**

- a) Elaborating the browser's responsibilities, explain in brief the different stages or methods of an Applet life cycle. Also discuss the order of these methods in the Applet life cycle.
- b) What is Polymorphism? What are the two types of Polymorphism in Java and also give example for each?

**(10+5)**

**7.**

- a) What is inner class? What is the difference between inner class and subclass? Give an example of both an inner class and a subclass.
- b) Explain public, private and protected access specifiers in Java.
- c) In context of UML, define association, aggregation and composition.

**(5+5+5)**

**8.**

- a) What are Sequence Diagram and Activity Diagram? When should each be used?
- b) State the difference between class and interface in Java.
- c) Write short notes on:
  - i) Any Java library for creating Graphic User Interface.
  - ii) Singleton class
  - iii) JAR File
  - iv) Abstract class

**(4+3+8)**

**9.**

- a) Differentiate between final, finally and finalize().
- b) Write a program in Java to search an element using binary search. Input to the program is given at command line in following format:  
[number of integers] [array of integers in increasing order] [integer to search]  
e.g. java BinarySearch 5 1 3 5 7 9 3. This represents the java file BinarySearch is to run where 5 integers are entered in increasing order [1, 3, 5, 7, 9] and it is desired to search an element 3 in it.

**(5+10)**

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