

# A10.1-R4 / 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 :

Name of Candidate :

परीक्षार्थी के हस्ताक्षर :

Signature of Candidate :

## परीक्षार्थियों के लिए निर्देश :

## Instructions for Candidate :

कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक 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 TWO PARTS in this Module/Paper. PART ONE contains FOUR questions and PART TWO contains FIVE questions.
भाग एक "वैकल्पिक" प्रकार का है जिसके कुल अंक 40 हैं तथा भाग दो "व्यक्तिपरक" प्रकार का है और इसके कुल अंक 60 हैं।	PART ONE is Objective type and carries 40 Marks. PART TWO is Subjective type and carries 60 Marks.
भाग एक के उत्तर, ओएमआर उत्तर-पुस्तिका पर ही दिये जाने हैं। भाग दो की उत्तर-पुस्तिका में भाग एक के उत्तर नहीं दिये जाने चाहिए।	PART ONE is to be answered in the OMR ANSWER SHEET only. PART ONE is NOT to be answered in the answer book for PART TWO.
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 पश्चात् 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 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 to the Invigilator.
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल/कमरा नहीं छोड़ सकते हैं। 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/her 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 पश्चात् एवं उत्तर लिखना आरम्भ करने से पहले उम्मीदवार जाँच कर यह सुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	After receiving the instruction to open the booklet and before starting to answer 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 Class diagram, component diagram, object diagram and deployment diagram are considered as types of :
- (A) Structural diagrams
  - (B) Behavioral diagrams
  - (C) Non-behavioral diagrams
  - (D) Non-structural diagrams
- 1.2 What is the action of function atan2(x,y) ?
- (A) Returns the angle whose tangent is  $x/y$
  - (B) Returns the cosine of the angle  $x$  in radians
  - (C) Returns the angle whose tangent is  $y$
  - (D) Returns the angle whose cosine is  $y$
- 1.3 The process of compartmentalizing the elements of an abstraction that constitute its structure and behaviour is called :
- (A) Abstraction.
  - (B) Encapsulation.
  - (C) Modularity.
  - (D) Hierarchy.
- 1.4 The correct statement for Type IV JDBC driver is :
- (A) which requires an intermediate layer
  - (B) which communicates through Java sockets
  - (C) which translates JDBC function calls into API not native to DBMS
  - (D) which is written in C++
- 1.5 What is the value of  $a$  in expression  $a = (\text{int})21.3/(\text{int})4.5$  ?
- (A) Error in compilation
  - (B) 4.7333
  - (C) 5
  - (D) 5.25
- 1.6 Which of the following statement is true about visibility ?
- (A) UML uses # for public element
  - (B) UML uses - for private element
  - (C) UML uses + for protected element
  - (D) All of the above
- 1.7 Advantage of Vectors possess over arrays is :
- (A) It is convenient to use vectors to store objects.
  - (B) A vector can be used to store a list of objects that may vary in size.
  - (C) We can add and delete objects from the list as and when required.
  - (D) All the above

<p><b>1.8</b> Which containers use a border layout as their default layout ?</p> <p>(A) The Window, Frame and Dialog classes use a border layout as their default layout.</p> <p>(B) Only Window class use a border layout as their default layout.</p> <p>(C) Only Frame class use a border layout as their default layout.</p> <p>(D) Only Dialog class use a border layout as their default layout.</p>	<p><b>2.</b> Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)</p>
<p><b>1.9</b> Which statements is correct for sizeof ?</p> <p>(A) The sizeof is a keyword.</p> <p>(B) The sizeof is a operator.</p> <p>(C) The sizeof is a keyword and operator both.</p> <p>(D) None of these</p>	<p><b>2.1</b> The copy constructor is used to clone of any object.</p>
<p><b>1.10</b> Which of these is a super class of all errors and exceptions in the Java language ?</p> <p>(A) Exception</p> <p>(B) Catchable</p> <p>(C) Throwable</p> <p>(D) Run-time Exception</p>	<p><b>2.2</b> The default value of a String type is null.</p> <p><b>2.3</b> The = operator in Java is left associative.</p> <p><b>2.4</b> In object-oriented design Encapsulation allows improving methods of an object independent of other parts of system.</p> <p><b>2.5</b> Inheritance in object-oriented modelling can be used to generalize and specialize classes.</p> <p><b>2.6</b> A sequence diagram shows the way of processes execute in a sequence.</p> <p><b>2.7</b> A stereotype is used for contracting the UML language.</p> <p><b>2.8</b> The state diagram ends with a diagram that depicts a bull's eye is known as Final State.</p> <p><b>2.9</b> The Bytecode transferred across a network and executed by Java Virtual Machine (JVM).</p> <p><b>2.10</b> The range of the int type is <math>-(2^{15})</math> to <math>2^{15} - 1</math>.</p>

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	Multiple inheritance is supported through	A.	Activity diagram
3.2	The "has-a" relationship between two classes	B.	class
3.3	Immediate superclass of the Applet class	C.	Applet viewer
3.4	Calling of parent class constructor	D.	Collaboration diagram
3.5	A template for objects of a particular type	E.	super
3.6	Program which executes applet is known as	F.	Panel
3.7	The interface used for multithreading	G.	Thread
3.8	Entry and exit actions in	H.	Runnable
3.9	Shows an interaction between objects	I.	Aggregation
3.10	Decompiler of java	J.	State Diagram
		K.	cavaj
		L.	Multiple class
		M.	Interface

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

A.	Multiplicity	B.	Class	C.	Exception
D.	finalize	E.	association	F.	attributes
G.	Util	H.	Graphics	I.	attributes and behaviours
J.	Sequence	K.	GUI	L.	run()
M.	lang				

- 4.1 An \_\_\_\_\_ is a condition that is caused by a run-time error in the program.
- 4.2 \_\_\_\_\_ is a constraint that specifies the range of permitted cardinalities.
- 4.3 The package \_\_\_\_\_ contains classes which implement data structures like Linked List, Dictionary and support.
- 4.4 In Java Applet display text using the paint() method and draw shapes using \_\_\_\_\_ object.
- 4.5 A set of objects that share the same \_\_\_\_\_ is referred to as a class.
- 4.6 The UML \_\_\_\_\_ diagrams are used to model the static view of a system.
- 4.7 The destructor function is replaced with a \_\_\_\_\_ function.
- 4.8 \_\_\_\_\_ diagram shows an interaction between objects arranged in a time sequence.
- 4.9 The \_\_\_\_\_ method is the heart and soul of any thread.
- 4.10 The AWT and SWING are used to create \_\_\_\_\_ for any application.

## PART TWO

(Answer any FOUR questions)

5. (a) Briefly explain the features of Object Oriented Technology.  
(b) Differentiate between Aggregation, Association and Composition.  
(c) What happens if we assign an integer value to a variable that is too large for that variable to hold ?  
(5+5+5)
6. (a) Draw a class diagram representing a book defined by the following statement: "A book is composed of a number of parts, which in turn are composed of a number of chapters. Chapters are composed of sections."  
(b) What is the use of this and super keywords ? Explain with suitable java program.  
(c) Define an exception called "NoMatchException" that is thrown when a string is not equal to "Examination". Write a program that uses this exception.  
(4+5+6)
7. (a) Explain the life cycle of applet. Write a java program to draw human sad face in applet.  
(b) Briefly explain the delegation event model.  
(c) Design Data Flow Diagram for requesting any URL from the web Browser.  
(5+5+5)

8. (a) How many types of Layout Managers in AWT ? Write a program in swing to show the Login page.  
(b) Explain jdbc-odbc bridge. With help of the program explain the connecting model in jdbc and type 1 driver in detail.  
(7+8)
9. (a) Write a java program to implement Stack with using attributes stk[10],tos(top of stack) and operations push() and pop(). The program include following things :  
1. Interface containing abstract method push() and pop()  
2. Fixedstack class implement the above method  
3. Variablestack class implement above method with variablestack size  
4. Main class create array of objects of Fixedstack class  
(b) How do you change the font of text that appears on a button and other components ?  
(10+5)

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SPACE FOR ROUGH WORK

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