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**RV COLLEGE OF ENGINEERING®**  
 (An Autonomous Institution affiliated to VTU)  
 IV Semester B. E. Examinations April/May-19  
**Computer Science and Engineering**  
**OBJECT ORIENTED PROGRAMMING USING JAVA**

*Time: 03 Hours**Maximum Marks: 100**Instructions to candidates:*

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer FIVE full questions from Part B. In Part B question number 2, 7 and 8 are compulsory. Answer any one full question from 3 and 4 & one full question from 5 and 6

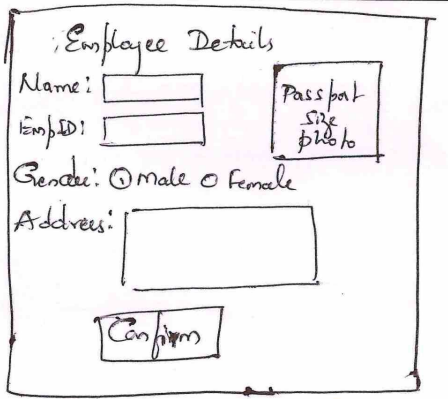
**PART A**

1	1.1	List the five metrics that measure the quality of abstraction which aid on building quality classes and object	02
	1.2	Write the relationship between <i>OOA</i> , <i>OOD</i> and <i>OOP</i> .	02
	1.3	_____ is the process of defining more than one method in a class having the same name but different method signature.	01
	1.4	_____ data structure is used by operating system to manage the recursion in Java.	01
	1.5	Write the output of following code: <div style="display: flex; justify-content: space-between;"> <div> <pre> Class A {     static int x = 100;     A()     {         x ++;         System.out.println(x);     } } </pre> </div> <div> <pre> Class B {     public static void main (string[] args)     {         A a1 = new A ();         A a2 = new A ();         A a3 = new A ();     } } </pre> </div> </div>	02
	1.6	_____ access specifier must be used for class so that a subclass can inherit it.	01
	1.7	_____ is order of execution of constructors in Java inheritance.	01
	1.8	Name the access specifiers that can be used for an interface.	01
	1.9	Which class inheritance is/are not supported in Java?	01
	1.10	Which access specifier can be used for a class so that its members can be occurred by a different class in the same package?	01
	1.11	Which method is called to start the execution of a thread and which method contain the body of the thread.	01
	1.12	_____ method help in clearing contents of the buffer.	01

1.13	Write the output of the following code : <pre>import java.util.*; class sample {     public static void main (string args[])     {         TreeSet &lt; string &gt; ts = new TreeSet &lt; string &gt; ();         ts.add ("D");         ts.add ("B");         ts.add ("C");         ts.add ("A");         System.out.println (ts);     } }</pre>	02
1.14	Write the life-cycle methods of Java Fx application class.	02
1.15	Determine the output of following Java code: <pre>class sample {     public static void main (string args[ ] )     {         try         {             throw new Test();         }         catch (Test t)         {             System.out.println ("caught the Test Exception");         }         finally         {             System.out.println (("Inside Finally bloac");         }     } }</pre>	01

### PART B

2	a	List the major and minor elements of Object Model. Discuss briefly the major elements of Object Model.	08
	b	Distinguish between Object-Oriented and Object-based languages. Give examples for each type. (Any 3 differences)	04
	c	Create a class hierarchy to organize the following drink classes: mineral water, wine, alcoholic, non-alcoholic, grape juice, soda, beer. Comment on the created hierarchy of class.	04
3	a	Discuss the various usages of final keyword with appropriate program segment.	04
	b	Discuss an unreachable catch block error with example Java code.	04
	c	Write a Java program that implements a Queue ( <i>FIFO</i> ), defines insert (), delete () and display () methods. Create a custom Exception class that can handle "Queue Full" and "Queue Empty" conditions. Write appropriate main () method to exercise the same.	08

		<b>OR</b>	
4	a	Discuss the types of packages and advantages of using a package in Java.	04
	b	Illustrate with code that “Java supports multiple inheritance” considering suitable example problem in a real world scenario.	06
	c	Write Java program to illustrate the following exceptions: i) Arithmetic Exception ii) Array Index Out of Bands Exceptions iii) Number Format Exception.	06
		<b>OR</b>	
5	a	Write a neat diagram and explain the various thread states and their relationships.	05
	b	Write a program in Java to compute and return the factorial of a given number n using block lambda.	05
	c	Demonstrate with suitable Java code, the differences between Iterator and list Iterator interface to traverse ArrayList collection.	06
		<b>OR</b>	
6	a	Discuss the different types of method references related to lambda expressions with example code.	05
	b	What is Synchronization? Illustrate the synchronization in a Producer – Consumer problem with example code.	05
	c	Demonstrate several of the legacy methods defined in vector class, with suitable Java program. i) Add an element to a vector ii) Retrieve first and last element of a vector. iii) Remove an element iv) Obtain capacity and number of elements currently in a vector.	06
7	a	Design and develop an interactive Java Fx <i>GUI</i> with components or controls to perform the following operations: i) A label for “Employee Details” ii) Labels for Name, EmpID, Gender, Address details iii) Text fields for _____ o _____ and Address; Radio buttons for selecting Gender iv) Two pushbuttons: to display Passport size photo of the Employee when selected/pressed. Confirm buttons – for confirmation of fields.	
		 <p style="text-align: center;">Fig 7a</p> <p>The layout of controls is as indicated in fig 7a.</p>	08

	b	Determine the functionality of console class with example Java code.	04
	c	Explain the greedy behavior and reluctant behavior of find() method of Matcher class for pattern matching.	04
8	a	Summarize the steps of the <i>JDBC</i> process with example code.	05
	b	Define <i>JSP</i> . Write a <i>JSP</i> program that creates a session attribute “EmpID” for Employee <i>ID</i> with value “EF015C123”, reads session attributes and then sends the attribute name and value to be browser.	06
	c	Illustrate with appropriate example code, Java Beans introspection where simple naming conventions are used to infer informations about properties, events and methods of a Bean.	05