SRM VALLIAMMAI ENGINEERING COLLEGE
(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CYBER SECURITY

&

INFORMATION TECHNOLOGY

QUESTION BANK

III SEMESTER

1904302–Object Oriented Programming

Regulation – 2019

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Prepared by

Dr. B. Muthusenthil ., Associate Professor/CSE
Dr. V. Dhanakoti ., Associate Professor/CSE
Dr.L. Karthikeyan A.P(Sel.G)/CSE
Ms. R. Thenmozhi A.P(Sel.G)/IT
Ms. N.J. Subashini (Sel.G)/CYS
Dr. S. Ravikumar (Sel.G)/AI&DS

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Dept of CSE, Cyber Security and IT

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SUBJECT : 1904302–Object Oriented Programming

SEM / YEAR: III Semester/ II Year

UNIT I INTRODUCTIONTOOOPANDJAVAFUNDAMENTALS

Object Oriented Programming - Abstraction – Encapsulation- Inheritance -Polymorphism- Characteristics of Java – The Java Environment - Java Source File -Structure – Compilation. Fundamental Programming Structures in Java – Data Types, Variables, Operators, Control Flow, Arrays.

PART – A

Q. No.	Questions	BT Level	Competence
1	Define OOP.	BTL1	Remembering
2	Define abstraction and encapsulation.	BTL1	Remembering
3	List the features of Object Oriented Programming.	BTL1	Remembering
4	Give the contents of Java Environment (JDK).	BTL1	Remembering
5	Define Inheritance and Polymorphism.	BTL1	Remembering
6	What is a variable? How to declare variable in java?	BTL1	Remembering
7	List any 4 types of escape sequences characters with example.	BTL1	Remembering
8	Infer how Java supports platform independency.	BTL2	Understanding
9	Classify the steps for execution of a java program.	BTL2	Understanding
10	Identify the three major sections of java source file.	BTL2	Understanding
11	Classify the types of inheritance in java.	BTL2	Understanding
12	Discuss about the three types of Comment line in java	BTL2	Understanding
13	Examine the difference between static variable and instance variable.	BTL3	Applying
14	Explain Byte code? What is JVM and JIT?	BTL3	Applying
15	Examine the features of Java Language.	BTL3	Applying

16	Modify the following while loop into for loop
	int n=10;
	int i=1;
	while(n>5)
	{
	i=i*2;
	n=n+2;
	}
	System.out.println(i);
		BTL3	Applying

17	Outline integer data types in java.	BTL4	Analyzing
18	Differentiate break and continue statements.	BTL4	Analyzing
19	What are public static void main(String args[]) and System.out.println()?	BTL4	Analyzing
20	Differentiate while() and do..while() loop	BTL4	Analyzing
21	Is JVM's platform independent? Justify.	BTL5	Evaluating
22	Assess the method to declare array and how to allocate the memory to for array.	BTL5	Evaluating

23	Assess the error in the following array declaration and rectify them.
	a. int a[]=new [10]int;
	float []b=new int[10.5];
		BTL5	Evaluating

24	Create a java program using control flow statements.	BTL6	Creating
	PART – B		
1	Describe the various features of the Object Oriented Programming Language.(13)	BTL1	Remembering
2	Define polymorphism. With an example, describe in detail about how polymorphism plays a useful role in Java.(13)	BTL1	Remembering
3	List the types of arrays in detail with example program.(13)	BTL1	Remembering
4	State the key elements of Object Oriented Programming and briefly explain it.(13)	BTL1	Remembering
5	With relevant examples describe abstraction and encapsulation. Write a java program that uses an abstraction and encapsulation.(13)	BTL2	Understanding
6	i) Illustrate the typical java program structure in detail.(7) ii) Summarize the general java program compilation and execution. (6)	BTL2	Understanding
7	Discuss the following: i) Control flow statements in Java (7) ii) Data types in Java (6)	BTL2	Understanding
8	Discuss in detail about the different control flow statements in Java with example (13)	BTL2	Understanding
9	Explain with the help of a program how object oriented programming overcomes the shortcomings of procedure oriented programming.(13)	BTL2	Understanding
10	i) Explain in detail the various operators in Java. (8) ii) Examine the rules for variable declaration (5)	BTL3	Applying
11	Implement a program in Java that interchanges the odd and even components in an array.(13)	BTL3	Applying
12	Write a Java program to sort set of names stored in an array in alphabetical order.(13)	BTL3	Applying
13	Explain in detail about static variable and static method in Java with example.(13)	BTL4	Analyzing
14	Explain how two numbers can be swapped with and without temporary variables. Write a java program for each(13)	BTL4	Analyzing
15	Explain the characteristics of OOPs.(13)	BTL4	Analyzing
16	Consider the following series of number: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, etc. Write a Java program to print the above series by getting the numbers of values to be printed from the user	BTL5	Evaluating
17	Create a simple Java program to implement basic Calculator operations.(13)	BTL6	Creating
	PART – C		
1	How would you find a given two one dimensional arrays A and B which are sorted in ascending order. Write a Java program to merge them into a single sorted array, see that is contains every item from array A and B, in ascending order.(15)	BTL5	Evaluating
2	i. Can you make the keyword public to private in main() method? Justify (3) ii. Write a java program using array to perform Sum of all values in an array (6) Find the greatest number in an array(6)	BTL5	Evaluating
3	Create a java program using local, static, instance variable with proper justification.(15)	BTL6	Creating

4	Develop a Java Program to find i) Largest of three numbers using Ternary Operator (8) ii) Smallest of three numbers using Ternary Operator (7)	BTL6	Creating
5	Develop a Java program to design the following pattern using any control flow statements * * * * * * * * * * * * * * *	BTL6	Creating

	UNIT II CLASSES AND CONSTRUCTORS		
	Defining classes in java -inheritance – Super classes- sub classes –Protected members – constructors in sub classes- the Object class – abstract classes and methods- final methods and classes – Interfaces – defining an interface, implementing interface, differences between classes and interfaces and extending interfaces.		
	PART – A		
Q. No.	**Questions**	**BT Level**	**Competence**
1	Define abstract class.	BTL1	Remembering
2	What is the use of Inheritance and what are its advantages?	BTL1	Remembering
3	List the methods provided by the object class.	BTL1	Remembering
4	Tell how interfaces can be extended.	BTL1	Remembering
5	Define Interface.	BTL1	Remembering
6	List the order of execution of constructor during creation of class hierarchy?	BTL1	Remembering
7	How can you access the super class version of an overridden method? How?	BTL2	Understanding
8	Do you declare private and protected modifiers for variables in interfaces? Justify	BTL2	Understanding
9	Infer how to access interface variables.	BTL2	Understanding
10	Illustrate ‘static’ keyword and its use.	BTL2	Understanding
11	List down the uses of final classes	BTL2	Understanding
12	Whether a subclass can access all members of super class? How?	BTL3	Applying
13	Can we instantiate an abstract class? Justify	BTL3	Applying
14	Deduce the meaning for the keywords: final, finalize.	BTL3	Applying
15	When to use final variable and method?	BTL3	Applying
16	What is the difference between superclass and subclass?	BTL4	Analyzing
17	What is the difference between classes and interface?	BTL4	Analyzing
18	What will be the effect if an abstract class is private?	BTL4	Analyzing
19	Does java support multiple inheritance?	BTL4	Analyzing
20	Does a class implement more than one interface? Write an example for it.	BTL5	Evaluating
21	What's the difference between an interface and an abstract class?	BTL5	Evaluating
22	How to make a statement execute before the main method is invoked by JVM?	BTL5	Evaluating
23	How to create an inner class?	BTL6	Creating
24	Write a simple program to implement abstract class.	BTL6	Creating
	PART – B		
1	Define Inheritance? With diagrammatic illustration and java programs illustrate the different types of inheritance.(13)	BTL1	Remembering

2	Define multiple inheritance and how to perform multiple inheritance in Java.(13)	BTL1	Remembering
3	Describe Abstract classes with an example program. Also describe the properties of abstract classes.(13)	BTL1	Remembering
4	Describe interfaces & how to implement it with a Java Program?(13)	BTL1	Remembering
5	Illustrate a Java Program to implement method Overloading and method overriding.(13)	BTL2	Understanding
6	Illustrate the about inner classes and its types with examples.(13)	BTL2	Understanding
7	Summarize the concept of supper classes and sub classes.(13)	BTL2	Understanding
8	Explain briefly about final methods, variables and classes with sample program contains all.(13)	BTL2	Understanding
9	Explain how to define an interface? Why do the members of interface are static and final?(13)	BTL3	Applying
10	Explain extending interfaces with a Program & Variables in a Program.(13)	BTL3	Applying
11	List and explain the methods used in object class with illustrative Program.	BTL3	Applying
12	How can we overload the constructor? Explain by using multilevel inheritance(13)	BTL4	Analyzing
13	How to use the super keyword to invoke a superclass's variable, constructor and methods. Illustrate with example program. (13)	BTL4	Analyzing
14	i.Is it possible to call a sub class constructor from super class constructor? Justify with example program(6) ii.Can we have this and super in the same constructor? Justify with example program(7)	BTL4	Analyzing
15	How many interfaces can a class inherit and can a same interface be inherited by 2 different classes? Explain it.(13)	BTL5	Evaluating
16	Can you give a detailed sketch of the differences between Single, Multilevel & Hierarchical Inheritance? .(13)	BTL5	Evaluating
17	Declare an abstract class to represent a bank account with data members name, account number, address and abstract methods withdraw and deposit. Method display() is needed to show balance. Derive a subclass Savings Account and add the following details: return on investment and the method calcAmt() to show the amount in theaccountafter1year.CreateinstanceofSavings Account and show the use of withdraw and deposit abstract methods.(13)	BTL6	Creating
PART – C			
1	Where you use final keyword in java ? Explain with illustrative Program(15)	BTL5	Evaluating
2	What is inheritance? How inheritance is implemented in java? Create a class Book and define display method to display book information. Inherit Reference_Book and Magazine classes from Book class and override display method of Book class in Reference_Book and Magazine classes. Make necessary assumptions required.(15)	BTL5	Evaluating
3	Develop an Interest interface which contains simpleInterest and compInterest methods and static final field of Rate 25%. Write a class to implement those methods.(15)	BTL5	Evaluating
4	Create an abstract Reservation class which has Reserve() abstract method. Implement the sub-classes like ReserveTrain and ReserveBus classes and implement the same. Use necessary variables, methods for reserving tickets(15)	BTL6	Creating

5	What is abstract class? Explain situations in which abstract classes are used.(15)	BTL6	Creating

UNIT-III STRINGS AND EXCEPTION HANDLING

String Operations - Exceptions - exception hierarchy - throwing and catching exceptions – built-in exceptions, creating own exceptions, packages.

PART – A

Q. No.	Questions	BT Level	Competence
1	What is meant by Strings in java?	BTL1	Remembering
2	Define Exception.	BTL1	Remembering
3	List the different categories of java packages.	BTL1	Remembering
4	State the general form of an exception handling block.	BTL1	Remembering
5	List the ways to search the strings.	BTL1	Remembering
6	What is meant by packages?	BTL1	Remembering
7	What are the constructors used for creating a String with byte array?	BTL2	Understanding
8	What are the various segments of an exception handling mechanism?	BTL2	Understanding
9	Identify the advantages of using exception handling mechanism.	BTL2	Understanding
10	Identify the steps involved in creating packages.	BTL2	Understanding
11	Define the two types of exception. Explain them	BTL2	Understanding
12	How can you directly access all classes in the packages?	BTL3	Applying
13	How can you access the class if it is declared without any access modifiers?	BTL3	Applying
14	How to check the starting and ending point of a string?	BTL3	Applying
15	Show what is the purpose of the finally clause of a try-catch-finally statement?	BTL 3	Applying
16	What value is assigned to String class type when it is automatically initialized and specify some operations that are performed using string?	BTL4	Analyzing
17	Develop a Java application to reverse the given String.	BTL4	Analyzing
18	Point out the syntax of defining and importing user-defined packages.	BTL 4	Analyzing
19	Create a String object similar to another string.	BTL4	Analyzing
20	Why java generates unreachable code error during multiple catch statements?	BTL5	Evaluating
21	Can an exception be rethrown? How?	BTL5	Evaluating
22	Can you tell how to create a string with an array of characters?	BTL5	Evaluating
23	Design a java program to concatenate two string?	BTL6	Creating
24	What happens if an exception are not provided by the user?	BTL6	Creating

PART – B

1	Define exception. Why it is needed? Explain the different types of exceptions and the exception hierarchy with appropriate examples using Java.(13)	BTL1	Remembering
2	Define package? How it is created and implemented in JAVA? (13)	BTL1	Remembering
3	List the benefits of using packages? Write down the steps in creating a package and using it in a java program with an example.(13)	BTL1	Remembering
4	Define String? How Strings are handled in java? Explain with code. (13)	BTL1	Remembering
5	What is package? How to add a class into a package? (13)	BTL2	Understanding
6	Discuss package concept to perform arithmetic operations. Explain how to use it? (13)	BTL2	Understanding
7	Illustrate the use of try-catch clauses by sample statements of rare type of run time error. (13)	BTL2	Understanding

8	Explain the following in Strings with example program: i) Concatenation(4) ii) Substrings(4) iii) Case Conversion(5)	BTL2	Understanding
9	How exceptions are handled in Java? Explain the important methods used to handle exception.(13)	BTL3	Applying
10	Explain about java building String and StringBuffer class functions with an example.(13)	BTL3	Applying
11	Describe the following concepts with example i. Try-catch-throw paradigm. (7) ii.Exception specification. (6)	BTL3	Applying
12	How do you compare two strings by ignoring the case? Give an example.(13)	BTL4	Analyzing
13	Discuss in detail about exception handling constructs and write a program to illustrate Divide by zero exception.(13)	BTL4	Analyzing
14	Assess in detail about the reusable classes in Packages.(13)	BTL4	Analyzing
15	Evaluate a try block that is likely to generate three types of exception and then incorporate necessary catch blocks and handle them appropriately.(13)	BTL5	Evaluating
16	Discuss briefly about i. String class (7) ii. StringBuffer class (6)	BTL5	Evaluating
17	Draw an exception hierarchy in java and explain with examples throwing and catching exceptions and common exceptions. (13)	BTL6	Creating
	PART – C		
1	i. Differentiate StringBuffer and String Class(8) ii. Write a java program to find the given string is palindrome or not (7)	BTL5	Evaluating
2	There are three statements in a try block–statement1,statement2 and statement3. After that there is a catch block to catch the exceptions occurred in the try block. Assume that exception has occurred in statement2. Does statement3 get executed or not?(15)	BTL5	Evaluating
3	Evaluate in what order multiple catch statements should be written with a program ?(15)	BTL5	Evaluating
4	Create a simple java program to illustrate the concept of packages and its types in detail.(15)	BTL6	Creating
5	Develop the Java program to handle i. Checked exceptions ii. Unchecked Exceptions	BTL 6	Creating

UNIT IV I/O AND MULTITHREADING			
Input / Output Basics – Streams – Byte streams and Character streams – Reading and Writing Console – Reading and Writing Files, Multi-threading, thread life cycle, creating threads, synchronizing threads, Inter-thread communication.			
PART – A			
Q. No.	**Questions**	**BT Level**	**Competence**
1	Define Stream.	BTL1	Remembering
2	What is meant by an input and output stream?	BTL1	Remembering
3	List the types of Streams in java and the methods defined in File class.	BTL1	Remembering
4	Define Thread and Multithreading.	BTL1	Remembering
5	List the types of methods used for Thread communications.	BTL1	Remembering
6	Tabulate the various states of a thread.	BTL1	Remembering

7	Illustrate the use of write() method in PrintStream class.	BTL2	Understanding
8	Summarize the Stream Tokenizer and RandomAccessFile.	BTL2	Understanding
9	What are the rules for performing context switch?	BTL2	Understanding
10	Identify the ways in which the threads may be created.	BTL2	Understanding
11	How to create a BufferedReader object?	BTL2	Understanding
12	How to read a string from the keyboard?	BTL3	Applying
13	Why there are predefined Thread class and Runnable interface for defining a thread class? Explain	BTL3	Applying
14	Which thread is executed when java program starts up?	BTL3	Applying
15	Differentiate between yielding and sleeping.	BTL3	Applying
16	What is the difference between the Reader/writer class and the InputStream/OutputStream class?	BTL4	Analyzing
17	Which value will be returned by readLine() method when it reached the End of File?	BTL4	Analyzing
18	Differentiate the use and constructors available in FileInputStream and FileOutputStream class.	BTL4	Analyzing
19	Classify what are three ways in which a thread can enter the waiting state?	BTL 4	Analyzing
20	Assess how will you set and get the priority for a thread.	BTL5	Evaluating
21	How can you know when another thread has finished its execution? Explain	BTL5	Evaluating
22	Why synchronization is required in thread?	BTL5	Evaluating
23	Prepare how to create a thread using Thread Class.	BTL6	Creating
24	Generalize what is daemon thread and which method is used to create the daemon thread.	BTL 6	Creating
	PART – B		
1	List the two ways of implementing threads with example.(13)	BTL1	Remembering
2	Label the different states of a thread and explain it.(13)	BTL1	Remembering
3	What are input and output streams? Explain them with illustrations.(13)	BTL1	Remembering
4	Describe the most commonly used classes for handling i/o related exceptions.(13)	BTL1	Remembering
5	What is a thread? Describe the complete life cycle of thread.(13)	BTL2	Understanding
6	Summarize the concept of streams and stream classes and their classification.(13)	BTL2	Understanding
7	Summarize briefly about thread synchronization with an example.(13)	BTL2	Understanding
8	Show what is synchronization? What is the price one pays if one uses synchronization? (13)	BTL2	Understanding
9	Examine Inter thread Communication. Why is this feature required and how is it achieved?(13)	BTL3	Applying
10	Describe in detail about multithread programming with example. (13)	BTL3	Applying
11	While reading a file how would you check whether you have reached the end of the file.(13)	BTL3	Applying
12	Explain the task for running a task in a separate thread and running multiple threads.(13)	BTL4	Analyzing
13	Differentiate byte stream and character stream with necessary examples.(13)	BTL4	Analyzing
14	i. Describe how to implement runnable interface for creating and starting threads. (7) ii. Define threads. Describe in detail about thread life cycle. (6)	BTL4	Analyzing
15	Evaluate which one is better to implement thread in Java extending :Thread class or implementing Runnable.(13)	BTL5	Evaluating

16	Illustrate in brief about i. Reading from a file. (7) ii. Writing in a file. (6)	BTL5	Evaluating
17	Design two threads to display odd numbered element in an array of size50 and even numbered element in another array of size 50.Create instances of the above thread and run them.(13)	BTL6	Creating
	PART – C		
1	Assess with an example program to illustrate the use of join(), wait(),notify(),and notifyall() associated with multithreaded programming.(15)	BTL5	Evaluating
2	To avoid deadlock in Java where N threads are accessing N shared resources : Conclude.(15)	BTL5	Evaluating
3	Develop an application to show multithreaded program to show hours, minutes and seconds on separate threads.(15)	BTL6	Creating
4	Generalize multithreading for an sample sequence of strings with a delay of 1000 millisecond for displaying it using Java threads . (15)	BTL6	Creating
5	How does InputStream.read() method work? Can you give me some sample code?(15)	BTL6	Creating

	UNIT V EVENTDRIVENPROGRAMMING		
	Graphics programming - Frame – Components - working with 2D shapes - Using color and fonts, - Basics of event handling - event handlers - adapter classes - actions - AWT event hierarchy.		
	PART – A		
Q. No.	**Questions**	**BT Level**	**Competence**
1	Define Event Listener.	BTL1	Remembering
2	List the methods contained in EventObject class.	BTL1	Remembering
3	Define canvas and window.	BTL1	Remembering
4	List the various methods available for drawing polygons, ellipses, arcs.	BTL1	Remembering
5	Define the component class.	BTL1	Remembering
6	State the order of execution of applet methods.	BTL1	Remembering
7	What is AWT Event class?	BTL2	Understanding
8	What is the lifecycle of an Applet?	BTL2	Understanding
9	What are the various controls supported by AWT?	BTL2	Understanding
10	Name three Component subclasses that support painting.	BTL2	Understanding
11	What is the purpose of the enableEvents() method?	BTL2	Understanding
12	Which package contains the methods to receive and process events and the method that support the events?	BTL3	Applying
13	Establish the use of color class and the methods provided by color class.	BTL3	Applying
14	Which containers use a border Layout as their default layout?	BTL3	Applying
15	How to place controls in a window and remove controls from a window?	BTL3	Applying
16	Which event is generated during checkbox operations?	BTL4	Analyzing
17	When the frame window is visible?	BTL4	Analyzing
18	What is the difference between init() and start() method?	BTL4	Analyzing
19	Identify the constants associated with Adjustment Event class.	BTL4	Analyzing
20	Assess what happens when we call repaint() method.	BTL5	Evaluating
21	How would you change the location of the event and get the co-ordinates of an event occurred?	BTL5	Evaluating
22	What class is the top of the AWT event hierarchy?	BTL5	Evaluating
23	How will you create an object of an item event?	BTL6	Creating

24	How will you create a TextArea object and TextField object?	BTL6	Creating
	PART – B		
1	Describe AWT controls in detail.(13)	BTL1	Remembering
2	List and explain the 2D Geometric Primitives.(13)	BTL1	Remembering
3	State and Explain the basic ofAWT Event handling in detail.(13)	BTL1	Remembering
4	i. Describe the AWT event hierarchy(6) ii. Describe the adapter classes using example(7)	BTL1	Remembering
5	Illustrate briefly about the working of frames and setting the properties to it.(13)	BTL2	Understanding
6	Summarize the component class and clearly explain its various methods.(13)	BTL2	Understanding
7	Identify the methods of graphic class in applet.(13)	BTL2	Understanding
8	What is the use of WindowListener? (13)	BTL2	Understanding
9	Explain the Action Listener with simple program.(13)	BTL3	Applying
10	Explain the event delegation approach and event listener.(13)	BTL3	Applying
11	How applet differs from applications and explains the applet life cycle in brief? (13)	BTL3	Applying
12	Which steps are must for event handling and what are the models available for event handling?(13)	BTL4	Analyzing
13	Analyze the Creating Frame Window by Instantiating and extending Frame class.(13)	BTL4	Analyzing
14	Write an AWT GUI application. Each time the "Count" button is clicked, the counter value shall increase by 1.(13)	BTL4	Analyzing
15	Can you write a program to draw 2D circle, rectangles and Fill those shapes with solid colors.(13)	BTL5	Evaluating
16	How are the elements of different layouts organized? Explain with suitable code	BTL5	Evaluating
17	Create a simple menu application that enables a user to select one of the following items: a. Radio1 b. Radio2 c. Radio3 d. Radio4 e. Radio5 i. From the menu bar of the application (5) ii. From a pop-up menu (4) iii.From a toolbar (4)	BTL6	Creating
	PART – C		
1	Write a java program to construct a shape by adding a rectangle to an ellipse.(15)	BTL5	Evaluating
2	Write a java program to implement a 3 frame in a window, In each frame create rectangle and fill each one with (i) color (ii) texture and (iii) gradient.(15)	BTL5	Evaluating
3	Write a java program to implement event handling by implementing ActionListener(15).	BTL6	Creating
4	Write a java program to draw basic shapes using a GUI application.(15)	BTL6	Creating
5	Write a program to create a frame with the following menus, such that the corresponding geometric object is created when a menu is clicked. a. Circle. (4) b. Rectangle. (4) c. Line. (4) d. Diagonal for the rectangle. (3)	BTL6	Creating