EVENING

27 DEC 2022

Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

[Total No. of Questions: 09] [Total No. of Pages: ....]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 5
Name of Subject: Programming in JAVA
Subject Code: PCIT-109
Paper ID: 16440
Scientific calculator is NotAllowed

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) Explain the following methods of String class: (i) indexOf( ) (ii) substring( ).
b) With the help of program discuss the concept of **static** variables.
c) Implement an interface using the keyword "Interface" with code snippet.
d) When can you use the **super** keyword?
e) Write a program to demonstrate the concept of command line arguments.
f) Write a program to display current date and time.

Part – B **[Marks: 04 each]**

Q2. Explain the difference between constructor and method in Java with example.

Q3. Discuss the different types of operators used in Java programming.

Q4. Write the difference between input and output stream class with example.

Q5. Compare method overloading and method overriding with suitable programming example.

Q6. Design a program to elaborate the visibility of class and there members for different access specifier.

Q7. Write a Java program to implement the concept of threads.

P.T.O.

27 DEC 2022

Part – C **[Marks: 12 each]**

Q8. a) Explain Static nested Classes? What is the difference between an Inner Class and a Sub-Class?

b) What is a singleton class? Give a practical example of iis usage.

OR

What are different types of Inheritance supported by Java? Explain with examples. Why multiple Inheritance is not supported by Java? Justify in detail.

Q9. Write a program to convert a String to a List of Characters in Java programming. Also implement the ***try, catch and throw*** method to handle the exception in the program.

Input: String = "JavaProgramming"

Output: [J,a,v,a,P,r,o,g,r,a,m,m,i,n,g]

OR

Design a program to join threads which allows one thread to wait until another thread completes its execution. For example "If *t* is a Thread object whose thread is currently executing, then t.**join()** will make sure that *t* is terminated before the next instruction is executed by the program". Also implement the concept of exception handling while preforming the joining operations.

****

Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

EVENING

[Total No. of Questions: 09] 07 JUN 2023 [Total No. of Pages: 2]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 5
Name of Subject: Programming in Java
Subject Code: PCIT-109
Paper ID: 16440
Scientific calculator is Not Allowed

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately. For programs, it is expected that suitable assumptions are made and stated wherever micro-level requirement related to the code to be developed is not mentioned.

Part – A **[Marks: 02 each]**

Q1

a) What goes behind the scene when your computer runs a Java program?

b) Compare between various iterative (loop) structures.

c) Briefly discuss with regards to package keeping in consideration private access modifier, other package (child and non-child class) and same class.

d) Differentiate between applet and application.

e) Assume **Rectangle** is class (with two instance variables length and breadth), what do you think the following code fragment does?

```
Rectangle b1= new Rectangle ( );
Rectangle b2=b1;
```

f) "Dynamic method dispatch is the mechanism by which a call to an overridden method is resolved at compile time, rather than run time". Is statement in double-quoted text correct, justify your answer.

Part – B **[Marks: 04 each]**

Q2 With the help of program, explain the concept of type conversion.

Q3 Explain how multiple threads can be created with example.

Q4 How arguments passed from the console can be received in the Java program and it can be used as an input? Give example.

Q5 Design two separate methods to swap two numbers without using a third variable with the help of a) bitwise operators b) multiplication and division operators.

Q6 Develop a code for reading from and writing to a file.

Q7 "String objects are immutable in Java." Justify the statement in double-quoted text with the help of a code.

Part – C **[Marks: 12 each]**

Q8 a) Compare recursion with iteration (4)

b) Explain constructor overloading with the help of a program. (8)

OR

a) Compare objects with variables in terms of passing them as parameters. (4)

b) Explain constructors in derived class with the help of a program. (8)

Q9 Design a code to handle multiple exceptions. The code must use concept of built-in and custom exceptions. Assume suitable data and run-time cases.

OR

Design code for Java event handling by implementing ActionListener and anonymous class.

****

Please check that this question paper contains___9___ questions and ___2___ printed pages within first ten

[Total No. of Questions: 09] [Total No. of Pages: 2]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 5
Name of Subject: Programming in Java
Subject Code: PCIT-109
Paper ID: 16440
Scientific calculator is Not Allowed

MORNING
11 MAY 2023

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) List and define the three OOPs principles.

b) List at least two functionalities of 'super' keyword.

c) What is the role of bitwise operators?

d) Briefly discuss how to import packages.

e) Assume Box is class (with two instance variables length and breadth), what do you think the following code fragment does?

Box b1= new Box( ); Box b2=b1;

f) Justify the role of 'StingBuffer' class

Part – B **[Marks: 04 each]**

Q2. With the help of program, explain the concept of explicit conversion.

Q3. Briefly discuss with the help of diagram phases involved in execution of a source code.

Q4. With the help of a program, demonstrate command line arguments.

Q5. "Interfaces can be extended", substantiate this statement by developing a suitable code fragment.

Q6. Design a code to handle **ArrayIndexOutOfBounds**, **ArithmeticException**, **NullPointerException** exceptions. There should also be an exception handler available for any user defined exception.

Q7. Design an applet based code to draw a bar chart for the runs scored by a cricket player in 6 one day matches.

Part – C **[Marks: 12 each]**

Q8. a) Compare recursion with iteration.

b) Compare overloading with overriding.

OR

Write a menu driven code using methods to handle following:

1. Start counting from the input number incrementing the value by 1 for each iteration.

The counting stops once the current value is divisible by 10.

2. Find the count of factors for a given number. For example, the factors of 10 are 1,2,5,10 and count in this case is 4.

Q9. a) Design code to swap two numbers without using a third variable with the help of bitwise operators.

b) Design a package to contain the class Student that contains data members such as name, roll number and another package contains the interface Sports which contains some sports information. Import these two packages in a package called Report which process both Student and Sport and give the report.

OR

a) Write a program to demonstrate inter-thread communication.

b) Design a code to handle multiple exceptions. The code must use concept of built-in and custom exceptions. Assume suitable data and run-time cases.

****

EVENING

[Total No. of Questions: 09] 2 8 MAY 2024 [Total No. of Pages: 2]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 5th
Name of Subject: Programming in Java
Subject Code: PCIT-109
Paper ID: 16440

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any mPissing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1

a) Explain how Java bytecode contributes to Java's platform independence.

b) Describe the use and importance of the break and continue statements in loops.

c) Describe how the finally block works in Java exception handling. Can it be omitted?

d) Differentiate between synchronized methods and synchronized blocks in Java.

e) Write a program to display current data and time.

f) How does operator precedence affect the evaluation of an expression in Java? Give an example.

Part – B **[Marks: 04 each]**

Q2. Discuss how the Java Virtual Machine (JVM) executes bytecode and the role of the Just-In-Time (JIT) compiler.

Q3. Describe the life cycle of a thread in Java. Explain how to create and manage multiple threads, including the use of synchronization to prevent race conditions.

Q4. Explain the concept of variable scope in Java and how it affects program behavior. Provide examples of local, instance, and class variables.

Q5. Compare and contrast abstraction and polymorphism, providing examples of how each is implemented in Java.

Q6. Describe how thread priorities and thread synchronization can impact the behavior of a multithreaded Java application. Provide examples to support your explanation.

Q7. Discuss the Java I/O system, including how Java handles input and output operations. Explain the difference between byte streams and character streams, and illustrate their usage with examples. Include reading from and writing to files.

P.T.O.

EVENING

2 8 MAY 2024

Part – C **[Marks: 12 each]**

Q8. Describe the garbage collection mechanism in Java. Explain how it works, including the different types of garbage collectors available in the JVM. Discuss the role of the finalize() method and why relying on it for resource cleanup is discouraged. Provide examples to illustrate proper resource management techniques in Java

OR

Describe the event handling mechanism in Java. Explain the delegation event model and how it is used to handle events such as mouse clicks, key presses, and window actions. Provide examples to illustrate the use of event listener interfaces and event adapter classes.

Q9. Write a Java program to demonstrate inheritance and polymorphism. Create a superclass Shape with a method draw(). Create three subclasses Circle, Rectangle, and Triangle that override the draw() method. In your main method, create an array of Shape objects and call the draw() method on each object. Show how dynamic method dispatch works in this scenario.

OR

Write a Java program to demonstrate the creation of multiple threads. Create a class MyThread that extends Thread. Override the run() method to print numbers from 1 to 5 along with the thread name. In the main method, create and start three MyThread instances. Use the join() method to ensure the main thread waits for all threads to complete before printing "All threads finished".

****

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech (IT)	**Semester**	6th
Subject Code	PCIT-109	**Subject Title**	Programming in JAVA
MSE No	1	**Course Coordinator(s)**	Er. Gitanjali
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	29th September 2023	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs,RBT level	Marks
Q1	State whether the following statement is true/false with justification "when a reference variable is assigned to another reference variable, another copy of object is created."	CO2, L1	2
Q2	"Write Once and Run Anywhere" - Support this statement with proper reasoning.	CO1, L4	2
Q3	If a class defines several constructors, is it feasible to invoke one constructor from another constructor? Justify your answer.	CO2, L3	4

Q4	a) Rewrite the following program segment using ternary operator instead of the if-else statement.
	String grade;
	if(marks >= 90) {
	grade = "A";
	} else if(marks >= 80) {
	grade = "B";
	} else {
	grade = "C";
	}
	b) How to create objects? Does Java support object destruction? Support your answer
		CO1, L3
		
		CO2, L2
			2+2 = 4

Q5	Compare and contrast method overloading with method overriding with the help of program(s).	CO2, L4	4
Q6	*Create* **class Date** with the following capabilities: a) *Output* the date in multiple formats, such as *MM/DD/YYYY* June 14, 1992 DDD YYYY b) Use overloaded constructors to create **Date objects** initialized with dates of the formats in part (a). In the first case the constructor should receive three integer values. In the second case, constructor should receive a String and two integer values. In the third case, constructor should receive two integer values, the first of which represents the day number in the year.	CO6, L6	8

Course Outcomes (CO) ***Students will be able to***

1	Use primitive data types, operators and control statements to write programs
2	Discuss methods and arrays along-with basic object oriented principles.
3	Implement Exception handling, multithreading, string handling, event handling, packages and interfaces
4	Create an event handling techniques for interaction of the user with a GUI.
5	Design client/server applications using socket programming and database connectivity.
6	Identify and solve complex problems in the environment of Java programming.

RBT Classification	**Lower Order Thinking Levels (LOTS)**			**Higher Order Thinking Levels (HOTS)**		
BT Level Number	L1	L2	L3	L4	L5	L6
BT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech (IT)	**Semester**	5th
Subject Code	PCIT-109	**Subject Title**	Programming in JAVA
MSE No	2	**Course Coordinator(s)**	Er. Gitanjali
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	8th November 2023	**Roll Number**	2104554

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Suppose you have thread T1, T2 and T3. How will you ensure that thread T2 will run after T1 and thread T3 after T2?	CO3, L2	2
Q2	Differentiate between keyword **throw** and **throws** with the help of program.	CO3, L4	2
Q3	With the help of program, demonstrate the use of any four methods of StringBuffer Class.	CO5, L3	4
Q4	a) Implementing runnable interface or extending thread, which method will you prefer for multithreading and why? b) Elaborate the role of thread priorities in multithreading. How do you set and get priority values for threads in java.	CO3, L3	(2 + 2)
Q5	Consider the following exception handling Java program. Check the program carefully and find out if there are any error occurs? If yes, how can you fix the error? If not, why not? Give your proper argument and output of program.	CO3, L4	(2 + 2)

```
class Exception{

public static void main(String args[ ] {

  try{
   try{
     System.out.println("going to divide");
     int b=59/0;
     } catch(ArithmeticException e){System.out.println(e);}
  try
   {
   int a[]=new int[5];
  a[5]=4;
   } catch(ArrayIndexOutOfBoundsException e) { System.out.println(e); }
  System.out.println("other statement);
   } catch(Exception e) {
  System.out.println("Exception handled"); }
 System.out.println("casual flow");
}
}
```

Q6	a) Design an **interface** called **Shape** with methods **draw()** and **getArea()**. Further design two classes called Circle and Rectangle that implements an interface Shape to compute area of respective shapes. Write a Java program for the same. b) Use inheritance to create an exception superclass (called ExceptionA) and exception subclasses ExceptionB and ExceptionC, where ExceptionB inherits from ExceptionA and ExceptionC inherits from ExceptionB. Write a program to demonstrate that the catch block for type ExceptionA catches exceptions of types ExceptionB and ExceptionC.	CO6, L6	(4 + 4)

Course Outcomes (CO) *Students will be able to*	
1	Use primitive data types, operators and control statements to write programs
2	Discuss methods and arrays along-with basic object oriented principles.
3	Implement Exception handling, multithreading, string handling, event handling, packages and interfaces
4	Develop event handling based components for interaction of the user with a GUI.
5	Create logic based application by the use of strings.
6	Identify and solve complex problems in the environment of Java programming.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

[Total No. of Questions: 09] [Total No. of Pages: 02]

Uni. Roll No. 2104554...

Program: B.Tech. (Batch 2018 onward)
Semester: 5th
Name of Subject: Programming in Java
Subject Code: PCIT-109
Paper ID: 16440

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) Discuss the principles of Object-Oriented Programming.
b) How do bitwise operators differ from relational operators in Java?
c) Compare and contrast do-while and while loops in Java with minimum two points.
d) What do you mean by garbage collection?
e) Describe the purpose and usage of break and continue statements.
f) Elaborate the structure of Java Program.

Part – B **[Marks: 04 each]**

Q2. Explain the concept of bytecode in the context of Java programming. How does the use of bytecode contribute to the platform independence of Java applications?

Q3. Explain the purpose of access specifiers in Java, citing proper programs.

Q4. Develop a Java program that demonstrates the concept of overloading constructors.

Q5. Combine the principles of abstraction and inheritance to illustrate how Java supports the creation of complex software systems with proper program.

Q6. Write a Java program that demonstrates the concept of multithreading. Create two threads: one to print even numbers from 1 to 10, and the other to print odd numbers from 1 to 10.

Q7. Design a Java program that reads an integer input from the user. Implement exception handling to ensure that the program handles scenarios where the user enters a non-integer value. If a non-integer value is entered, the program should catch the exception and display an error message, prompting the user to enter a valid integer.

Part – C **[Marks: 12 each]**

Q8. Explain in detail the roles and applications of the "super," "this," and "final" keywords in Java.

OR

Illustrate the thread life cycle in multithreaded programming, outlining the various stages a thread undergoes from its creation to termination. Additionally, elaborate on the concept of exception handling in Java, emphasizing the pivotal role played by try, catch, and finally blocks in effectively managing and mitigating runtime errors.

Q9. Create a Java program that converts temperature from Fahrenheit to Celsius. Prompt the user to enter the temperature in Fahrenheit and use appropriate data types for variables. Implement necessary control statements to ensure valid input. Use the formula Celsius=5/9×(Fahrenheit−32) for the conversion. Display the result with an appropriate message. Additionally, incorporate a conditional statement to inform the user if the converted temperature is below freezing (0 degrees Celsius) or above a comfortable room temperature (25 degrees Celsius).

OR

How does Java's String class facilitate efficient string handling through its various constructors, length attribute, special operations, character extraction methods, comparison mechanisms, search functionalities, and modification capabilities?

****

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech (IT)	**Semester**	5th
Subject Code	PCIT-109	**Subject Title**	Programming in JAVA
MSE No	2	**Course Coordinator(s)**	Er. Gitanjali
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	8th November 2023	**Roll Number**	2104514

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Suppose you have thread T1, T2 and T3. How will you ensure that thread T2 will run after T1 and thread T3 after T2?	CO3, L2	2
Q2	Differentiate between keyword **throw** and **throws** with the help of program.	CO3, L4	2
Q3	With the help of program, demonstrate the use of any four methods of StringBuffer Class.	CO5, L3	4
Q4	a) Implementing runnable interface or extending thread, which method will you prefer for multithreading and why? b) Elaborate the role of thread priorities in multithreading. How do you set and get priority values for threads in java.	CO3, L3	(2 + 2)
Q5	Consider the following exception handling Java program. Check the program carefully and find out if there are any error occurs? If yes, how can you fix the error? If not, why not? Give your proper argument and output of program.	CO3, L4	(2 + 2)

```
class Exception{
public static void main(String args[ ] {
   try{
     try{
       System.out.println("going to divide");
       int b=59/0;
        } catch(ArithmeticException e){System.out.println(e);}
     try
      {
      int a[]=new int[5];
      a[5]=4;
       } catch(ArrayIndexOutOfBoundsException e) { System.out.println(e); }
      System.out.println("other statement);
       } catch(Exception e) {
      System.out.println("Exception handled"); }
      System.out.println("casual flow");
 }
}
```

01/11/24

Q6	a) Design an **interface** called **Shape** with methods **draw()** and **getArea()**. Further design two classes called Circle and Rectangle that implements an interface Shape to compute area of respective shapes. Write a Java program for the same. b) Use inheritance to create an exception superclass (called ExceptionA) and exception subclasses ExceptionB and ExceptionC, where ExceptionB inherits from ExceptionA and ExceptionC inherits from ExceptionB. Write a program to demonstrate that the catch block for type ExceptionA catches exceptions of types ExceptionB and ExceptionC.	CO6, L6	(4 + 4)

Course Outcomes (CO) ***Students will be able to***	
1	Use primitive data types, operators and control statements to write programs
2	Discuss methods and arrays along-with basic object oriented principles.
3	Implement Exception handling, multithreading, string handling, event handling, packages and interfaces
4	Develop event handling based components for interaction of the user with a GUI.
5	Create logic based application by the use of strings.
6	Identify and solve complex problems in the environment of Java programming.

RBT Classification	**Lower Order Thinking Levels (LOTS)**			**Higher Order Thinking Levels (HOTS)**		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech (IT)	**Semester**	5th
Subject Code	PCIT-109	**Subject Title**	Programming in JAVA
MSE No	2	**Course Coordinator(s)**	Er. Gitanjali
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	8th November 2023	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Suppose you have thread T1, T2 and T3. How will you ensure that thread T2 will run after T1 and thread T3 after T2?	CO3, L2	2
Q2	Differentiate between keyword **throw** and **throws** with the help of program.	CO3, L4	2
Q3	With the help of program, demonstrate the use of any four methods of StringBuffer Class.	CO5, L3	4
Q4	a) Implementing runnable interface or extending thread, which method will you prefer for multithreading and why? b) Elaborate the role of thread priorities in multithreading. How do you set and get priority values for threads in java.	CO3, L3	(2 + 2)

Q5	**Consider the following exception handling Java program. Check the program carefully and find out if there are any error occurs? If yes, how can you fix the error? If not, why not? Give your proper argument and output of program.**
	class Exception{
	public static void main(String args[ ] {
	try{
	try{
	System.out.println("going to divide");
	int b=59/0;
	} **catch**(ArithmeticException e){System.out.println(e);}
	try
	{
	int a[]=new **int**[5];
	a[5]=4;
	}**catch**(ArrayIndexOutOfBoundsException e) { System.out.println(e); }
	System.out.println("other statement);
	} **catch**(Exception e) {
	System.out.println("Exception handled"); }
	System.out.println("casual flow");
	}
	}
		CO3, L4	(2 + 2)

Q6	a) Design an **interface** called **Shape** with methods **draw()** and **getArea()**. Further design two classes called Circle and Rectangle that implements an interface Shape to compute area of respective shapes. Write a Java program for the same. b) Use inheritance to create an exception superclass (called ExceptionA) and exception subclasses ExceptionB and ExceptionC, where ExceptionB inherits from ExceptionA and ExceptionC inherits from ExceptionB. Write a program to demonstrate that the catch block for type ExceptionA catches exceptions of types ExceptionB and ExceptionC.	CO6, L6	(4 + 4)

Course Outcomes (CO) *Students will be able to*	
1	Use primitive data types, operators and control statements to write programs
2	Discuss methods and arrays along-with basic object oriented principles.
3	Implement Exception handling, multithreading, string handling, event handling, packages and interfaces
4	Develop event handling based components for interaction of the user with a GUI.
5	Create logic based application by the use of strings.
6	Identify and solve complex problems in the environment of Java programming.

RBT Classification	**Lower Order Thinking Levels (LOTS)**			**Higher Order Thinking Levels (HOTS)**		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Interface Shape {
void draw();
void getArea();
}

class Circle implements Shape {
public void main(String args[]) {
a = Area of Circle = π r²;
}
}

Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	**Semester**	5
Subject Code	PCIT-109	**Subject Title**	Programming in Java
Mid Semester Test (MST) No.	2	**Course Coordinator(s)**	Er. Neha Gupta
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST		**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Briefly state the role of "Wrapper Classes" with a suitable example.	CO4, L2	2
Q2	Justify the statement "Java does not support multiple inheritances".	CO3, L4	2
Q3	(a)Justify the statement "Interface can be Extended" with the help of code. (b)Demonstrate the concept of packages.	CO1, L3, L4	4(2+2)
Q4	Illustrate the life cycle of thread. Write a program on how to create the threads.	CO2, L3	4(2+2)
Q5	Compare method overloading and method overridingwith suitable program.	CO4, L4	4
Q6	(a) Develop code for user-definedexceptions which illustrate the usage of multiple "catch" blocks. (b) Justify the following exception handling related statements (keeping in mind try, catch, finally, etc.) with the help of codes: (i) " If an exception has occurred in try block then control flowwill be finally block followed by default exception handling mechanism". (ii) "If an exception does not occur in try block then control flowwill be finally block followed by rest of the program".	CO3, L6, L4	8(4+2+2)

Course Outcomes (CO)

Students will be able to

1	Use primitive data types, operators and control statements to write programs
2	Discuss methods and arrays along-with basic object oriented principles.
3	Implement Exception handling, multithreading, string handling, event handling, packages and interfaces
4	Create an event handling techniques for interaction of the user with a GUI.
5	Design client/server applications using socket programming and database connectivity.
6	Identify and solve complex problems in the environment of Java programming.

RBT Classification	**Lower Order Thinking Levels (LOTS)**			**Higher Order Thinking Levels (HOTS)**		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	**Semester**	5th
Subject Code	PCIT-109	**Subject Title**	Programming in Java
Mid Semester Test No.	1	**Course Coordinator(s)**	Dr. Manjot Kaur
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST		**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	What is the meaning of first line of java program "public static void main (String args[])?	CO1, L2	2
Q2	What is a byte code?	CO1, L4	2
Q3	Difference between recursion and iteration with valid program.	CO2, L3	1+3=4

Q4	What is the output of the following Java Code
	a) int a=9;
	float b = a/2;
	System.out.println(b);
	
	b) byte b = 25;
	b++;
	b = b+1;
	System.out.println(b);
		CO3,L5	2+2=4

Q5	Explain what makes Java as platform independent language?	CO3,L4	4
Q6	Explain different types of operators used in java programming. Write a simple program to demonstrate operator precedence in java.	CO2,L6	3+5=8

Course Outcomes (CO)

Students will be able to

1	Use primitive data types, operators and control statements to develop programs.
2	Discuss methods and arrays along-with basic object oriented principles.
3	Implement exception handling, multithreading, string handling, packages and interfaces.
4	Develop event handling based components for interaction of the user with a GUI.
5	Create logic based application by the use of strings.
6	Identify and solve complex problems in the environment of Java programming.

RBT Classification	**Lower Order Thinking Levels (LOTS)**			**Higher Order Thinking Levels (HOTS)**		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech (IT)	**Semester**	6th
Subject Code	PCIT-109	**Subject Title**	Programming in JAVA
MSE No	1	**Course Coordinator(s)**	Er. Gitanjali
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MSE	29th September 2023	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs,RBT level	Marks
Q1	State whether the following statement is true/false with justification "when a reference variable is assigned to another reference variable, another copy of object is created."	CO2, L1	2
Q2	"Write Once and Run Anywhere" - Support this statement with proper reasoning.	CO1, L4	2
Q3	If a class defines several constructors, is it feasible to invoke one constructor from another constructor? Justify your answer.	CO2, L3	4

Q4	a) Rewrite the following program segment using ternary operator instead of the if-else statement.
	String grade;
	if(marks >= 90) {
	grade = "A";
	} else if(marks >= 80) {
	grade = "B";
	} else {
	grade = "C";
	}
	b) How to create objects? Does Java support object destruction? Support your answer
		CO1, L3
		
		CO2, L2
			2+2 = 4

Q5	Compare and contrast method overloading with method overriding with the help of program(s).	CO2, L4	4
Q6	Create class Date with the following capabilities: a) Output the date in multiple formats, such as MM/DD/YYYY June 14, 1992 DDD YYYY b) Use overloaded constructors to create Date objects initialized with dates of the formats in part (a). In the first case the constructor should receive three integer values. In the second case, constructor should receive a String and two integer values. In the third case, constructor should receive two integer values, the first of which represents the day number in the year.	CO6, L6	8

Course Outcomes (CO) *Students will be able to*

1	Use primitive data types, operators and control statements to write programs
2	Discuss methods and arrays along-with basic object oriented principles.
3	Implement Exception handling, multithreading, string handling, event handling, packages and interfaces
4	Create an event handling techniques for interaction of the user with a GUI.
5	Design client/server applications using socket programming and database connectivity.
6	Identify and solve complex problems in the environment of Java programming.

RBT Classification	**Lower Order Thinking Levels (LOTS)**			**Higher Order Thinking Levels (HOTS)**		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating