



Roll No.

### B.E (FT) END SEMESTER EXAMINATIONS – NOV/DEC 2023

Computer Science and Engineering

Fifth Semester

#### CS6308 – JAVA PROGRAMMING

(Regulation 2018 – RUSA)

Time : 3 Hours

Answer ALL Questions

Max. Marks : 100

CO1	To learn about the fundamentals of Java language constructs
CO2	To familiarize the student with Object Oriented Programming in Java
CO3	To expose the student to creating UI
CO4	To understand the concepts of parallel programming
CO5	To develop web applications with Java

#### Part – A (10 x 2 = 20 Marks)

Sl No.	Questions	Marks	CO	BL
1.	Identify the errors in the following code: public int searchAccount( int[25] number ) { number = new int[15]; for (int i = 0; i < number.length; i++) { number[i] = number[i-1] + number[i+1]; } return number; }	2	CO1	L2
2.	Find out what is wrong in the following code? public class Test { private int id; public void m1() { this.id = 45; } public void m2() { Test.id = 45; } }	2	CO1,CO2	L1
3.	Differentiate between overriding and overloading.	2	CO1,CO2	L2
4.	What is the need for the layout managers? What is the default.layout manager for a frame? How can the component added to a frame?	2	CO1,CO2	L3
5.	Using the try–catch block, write a code fragment that opens a file “default.dat”.	2	CO1,CO2	L4
6.	What are the different ways of implementing multithreading in a java program?	2	CO4,	L2

7.	What is the role of Drivers in JDBC?	2	CO2	L1
8.	What is the advantage of implementing Comparator interface in a class?	2	CO2	L2
9.	Write about the lifecycle of JSP.	2	CO3	L1
10.	List the types of Java Web services.	2	CO5	L1

**Part - B (8 X 8 = 64 Marks)**

**(Answer any 8 questions)**

Sl No.	Questions	Marks	CO	BL												
11	<p>A teacher has five students who have taken four tests and the test scores are stored in 2D array. The following grading scale is assigned to a student based on average of his/her four tests.</p> <table border="1"> <tr> <th>Test Score</th> <th>Grade</th> </tr> <tr> <td>90-100</td> <td>A</td> </tr> <tr> <td>80-89</td> <td>B</td> </tr> <tr> <td>70-79</td> <td>C</td> </tr> <tr> <td>60-69</td> <td>D</td> </tr> <tr> <td>0-59</td> <td>F</td> </tr> </table> <p>Write a program to print each student's average test score and grade.</p>	Test Score	Grade	90-100	A	80-89	B	70-79	C	60-69	D	0-59	F	8	CO1	L2, L3
Test Score	Grade															
90-100	A															
80-89	B															
70-79	C															
60-69	D															
0-59	F															
12	<p>Define a class called <b>Salesperson</b> whose data members are: <b>age</b>(integer), <b>name</b>(String), <b>number of sales</b>(integer), <b>salary</b>(double). The member functions are: constructor with three arguments to initialise member variables age, name and salary and number of sales is initialised always initialised to zero, <b>addSale(double saleAmount)</b> – method to increment the number of sales for the amount of sale made, <b>int getSales()</b> – to return the sales made by the Salesperson, <b>display()</b> – to display the details of the Salesperson, <b>double getBonus()</b> – to return the bonus of Salesperson based on the following table:</p> <table border="1"> <tr> <th>Sales range</th> <th>Bonus amount</th> </tr> <tr> <td>10-20</td> <td>1000</td> </tr> <tr> <td>20 – 40</td> <td>2000</td> </tr> <tr> <td>➤ 40</td> <td>5000</td> </tr> </table> <p>Write a driver program to create object of Salesperson and test all methods.</p>	Sales range	Bonus amount	10-20	1000	20 – 40	2000	➤ 40	5000	8	CO1,CO2	L2, L3				
Sales range	Bonus amount															
10-20	1000															
20 – 40	2000															
➤ 40	5000															
13	<p>Design a class named <b>Ticket</b> with fields for holding <b>category(char)</b> – that takes value A, B and C, <b>ticketPrice_A (double)</b>, <b>ticketPrice_B (double)</b> and <b>ticketPrice_C (double)</b>. The methods are constructor with arguments to initialise data fields and <b>toString()</b> to display the details of Ticket.</p> <p>Create a class named <b>Concert</b>, which extends the Ticket class. The <b>Concert</b> class should have a field for a <b>totalSeats(int)</b> and the seat distribution for each category</p>	8	CO1,CO2	L2,L3												

	<p>is given by <b>catA_seat(int)</b>, <b>catB_seat(int)</b> and <b>catC_seat(int)</b>. The methods are:</p> <ul style="list-style-type: none"> <li>• Constructor with arguments</li> <li>• <b>void sell(char,int)</b> – that decrements the total number of seats and respective category seat</li> <li>• <b>void cancel(char,int)</b> that increments the total number of seats and respective category seat</li> <li>• <b>double calculate()</b> – that returns the revenue generated by sales of Ticket.</li> <li>• <b>toString()</b> - display the details of Concert.</li> </ul> <p>Write a Test program to create objects of the classes and invoke the methods of the classes.</p>															
14	<p>Create a Conference Registration System as GUI application that calculates the registration fees for a conference. The general conference registration is Rs.895 per person and student registration is Rs. 495. There is an optional keynote speech for Rs.300 per person. The optional preconference workshops listed below.</p> <table border="1" data-bbox="295 889 1057 1085"> <thead> <tr> <th>Workshop</th><th>Fee(Rupees)</th></tr> </thead> <tbody> <tr> <td>Network Security</td><td>295</td></tr> <tr> <td>Advanced Java Programming</td><td>395</td></tr> <tr> <td>Spring Framework</td><td>495</td></tr> </tbody> </table> <p>The application should allow the user to select the registration type, the optional keynote speech and as many preconference workshop. The total cost should be displayed.</p>	Workshop	Fee(Rupees)	Network Security	295	Advanced Java Programming	395	Spring Framework	495	8	CO2	L2,L3				
Workshop	Fee(Rupees)															
Network Security	295															
Advanced Java Programming	395															
Spring Framework	495															
15	<p>Implement <b>FileHandler</b> class that contains write and read methods to read and write objects of <b>SalesPerson</b> defined in question 12. Write a main program that will print the <b>SalesPerson</b> who made maximum number of sales.</p>	8	CO3,CO5	L2,L3												
16	<p>Write a Java program to display the message “Welcome to Java Exam” using multiple threads with sleep interval of 100 ms.</p>	8	CO2	L2,L3												
17	<p>Develop a Java program to create a Bank Account database named BankDB. The BankDB database will have a table named AccountHolder, with the following columns:</p> <table> <thead> <tr> <th>Column Name</th><th>Data Type</th></tr> </thead> <tbody> <tr> <td>Name</td><td>Char (50)</td></tr> <tr> <td>Balance</td><td>Double</td></tr> <tr> <td>Address</td><td>Char(100)</td></tr> <tr> <td>Primary key</td><td></td></tr> <tr> <td>Account number</td><td>Double</td></tr> </tbody> </table> <p>The table will contain 5 rows with various account holder details. Write a program that connects to the BankDB database, and allows the user to perform the following operations:</p> <ol style="list-style-type: none"> <li>Sort the list of AccountHolder by balance, in ascending order.</li> </ol>	Column Name	Data Type	Name	Char (50)	Balance	Double	Address	Char(100)	Primary key		Account number	Double	8	CO4	L2,L3
Column Name	Data Type															
Name	Char (50)															
Balance	Double															
Address	Char(100)															
Primary key																
Account number	Double															

	ii. Get the total amount in bank.			
18	Create a class called <b>PhoneBook</b> that has fields <b>name(String)</b> and <b>phone number(int)</b> . Define constructor and <b>toString()</b> methods. Implement a driver program that creates atleast five <b>PhoneBook</b> objects and stores in an arraylist, the duplicate names(if any) in the arraylist should be deleted and <b>PhoneBook</b> objects must be displayed.	8	CO2	L2,L3
19	Write a simple client/server application using socket programming. The client will send the amount and years of the Fixed deposit to a server. The server receives the data and produces the result. The result is sent to client and the client displays it in console.	8	CO5	L2,L3
20	Write an applet that receives a name through a parameter and displays it with a "Hello" message.	8	CO2	L2,L3
21	Create an Interface Tax with method calculateTax and static variable tax initialised with value 0.15. Implement this interface in class SalesPerson defined in Q.no.12. Write a main program to print the SalesPerson who has paid highest tax by implementing Comparator Interface.	8	CO5	L2,L3
22	List out the steps involved in creating a RMI application with an example.	8	CO5	L2,L3

**Part - C(2 X 8 = 16 Marks)**

Sl No.	Questions	Marks	CO	BL
23.	Write a simple generic version of method <b>isEqualTo</b> that compares its two arguments with the <b>equals</b> method and returns true if they're equal and false otherwise. Use this generic method in a program that calls <b>isEqualTo</b> with a variety of built-in types, such as <b>Object</b> or <b>Integer</b>	6	CO3	L2,L2
24.	With respect to Q.no 13, write an exception class that can be instantiated and thrown whenever a negative or zero is initialised as <b>Ticket</b> 's each category price. Write another exception class that can be instantiated and thrown to validate the method <b>sell()</b> that the number of seats sold doesnot exceed totalSeats. Demonstrate the exception classes in a Java program.	10	CO1 CO2	L2,L3

(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

