VIT
Vellore Institute of Technology
CHENNAI

Reg. Number:	24MCA1034

Continuous Assessment Test (CAT) – I Jan 2025

Programme	:	MCA	Semester	:	Winter Sem 24-25
Course Code & Course Title	:	PMCA502L & Java Programming	Class Number	:	CH2024250501721
Faculty	:	Dr. M. Jayasudha	Slot	:	A1+TA1
Duration	:	90 minutes	Max. Mark		50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Use statistical tables supplied from the exam cell as necessary
- Use graph sheets supplied from the exam cell as necessary
- Only non-programmable calculator without storage is permitted

Answer all questions

Q. No	Sub Sec.	Description	Marks
1		A manager in an organization wishes to analyze the performance of his team members. Assume that he is supervising 5 employees in his division. Performance appraisal will be evaluated based on the score obtained by each employee. Develop a java program using **arrays and methods** to obtain the employee points which are ranges from 1 to 5 and perform the following: a) Display the lowest, highest and average scores of the employee (3 M) b) Create a new array for storing the scores above average and below average separately (3 M) c) Calculate the number of employees in each array (2 M) d) Use finalize () function to clear the object memory once it is no longer used (2 M)	10
2		Create a class named Billing that includes three overloaded computeBill() methods for a photo book store. When computeBill() receives a single parameter, it represents the price of one photo book ordered. Add 8% tax, and return the total due. When computeBill() receives two parameters, they represent the price of a photo book and the quantity ordered. Multiply the two values, add 8% tax, and return the total due. When computeBill() receives three parameters, they represent the price of a photo book, the quantity ordered, and a coupon value. Multiply the quantity and price, reduce the result by the coupon value, and then add 8% tax and return the total due. Write a main() method that tests all three overloaded methods.	10
3		Develop the java program using user defined package namely "perfectshuffle" to implement the below scenario: Perfect Shuffle algorithm takes a set of 'n' (even) unsorted numbers as input and returns a sorted numbers in a particular fashion. First half of the sorted 'n' numbers are in odd position in order and the second half of the sorted numbers are in even positions in order. For example, if the input	10

0 1 2 3 4 5 6 7

		for the program is (11,33,22, 55, 44, 66, 88, 77), then the output should be (11,55,22,66,33,77,44,88). Also, handle the suitable predefined exception if the user enters other than the number.	
4		Create a **CourseException** class that extends Exception. Create a Course class with String that holds a college course's department (for example, CSE), a course number (for example, 101), and a number of credits (for example, 3) and whose getdata() member function requires values for each field., throw a CourseException if the department does not consist of three letters, if the course number does not consist of three digits between 100 and 499 inclusive, or if the credits are less than 0.5 or more than 6. Write an application and display an appropriate message when a Course object is created.	10
5		Develop a Java program to create three threads, First thread will print the odd numbers and second thread will print the even numbers between 1 to 20 and third thread will display the sum of the odd and even number generated by the first and second thread on every iteration. Use synchronization in multithreading to implement the above scenario. For example, during the first iteration, the first thread will display 1, the second thread will display 2 and the third thread will display 3.	10

**********All the best **********