



Continuous Assessment Test (CAT) – I – JAN 2025

Programme	: MCA	Semester	WINTER 2024-25
Course Code & Course Title	: PMCA603L Mobile Application Design and Development	Class Number	CH2024250501742
Faculty	: Dr. Christy Jackson J	Slot	C1
Duration	: 90 mins	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 scale and pencil, draw diagrams and give illustrations whenever necessary

Answer **ALL** questions

Q. No	Description	Marks
1	Write a Dart program to define a class called Student with private attributes name and age. Use encapsulation principles to set and get the values of these attributes. Demonstrate how encapsulation enhances security and usability in your solution.	10
2	Given a scenario where you need to calculate the area of various shapes, create an abstract class Shape with an abstract method <code>calculateArea()</code> . Implement this method in derived classes Circle and Rectangle . Write a Dart program to calculate the area of a circle with radius 5 and a rectangle with width 4 and height 6.	10
3	Write a Dart program to demonstrate multiple inheritance using interfaces. Define two interfaces, Vehicle and Engine , each containing methods related to their specific functionality. The Vehicle interface should include methods <code>start()</code> and <code>stop()</code> , while the Engine interface should have methods <code>checkEngine()</code> and <code>start()</code> . Create a concrete class Car that implements both interfaces resolving any potential conflicts while implementing interfaces, by providing a unified implementation. Enhance the Car class by adding an attribute <code>model</code> and include print statements in the methods to indicate which functionality is being executed. In the <code>main()</code> function, create an instance of the Car class, invoke all the methods, and demonstrate how conflicts are resolved while showcasing the complete functionality of the implemented interfaces.	10
4	Design a Flutter UI using a <code>StatelessWidget</code> that visually represents a user profile. The UI should include: <ul style="list-style-type: none">• A <code>Container</code> at the top displaying the user's profile picture• Below the profile picture, use a <code>Column</code> to align the user's name, email, and a short bio in a vertically stacked <code>Text</code> format.• Add a <code>Row</code> at the bottom to create three evenly spaced buttons (e.g., "Message," "Follow," and "View Profile").	10

5	Create a Flutter app that displays a counter value starting at 0 in the center of the screen. Place two buttons labelled "Increment" and "Decrement below the counter". When "Increment" is clicked, the counter value should increase by 1, and when "Decrement" is clicked, the counter value should decrease by 1.	10
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