



VIT

Vellore Institute of Technology
(Deemed to be University under Section 3 of UGC Act, 1956)

SLOT: F2 + TF2

REG.NO.:

**SCHOOL OF MECHANICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST (CAT) -II
FALL SEMESTER 2025-2026**

+Programme Name & Branch

: B.Tech (Automotive Engineering - BMA)

Course Code

: BMEE414

Course Name

: Vehicle Body and Aerodynamics Engineering

Faculty Name(s)

: Dr. Y. Mukkamala

Class Number(s)

: VL2025260103135

Date of Examination

: Oct 10, 2025

Exam Duration

: 90 minutes

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes Statements:
 - CO. 2: Describe the importance of materials selection for body and trim.
 - CO. 3: Explicate the concepts of aerodynamics
 - CO. 4: Develop the methods of improving the stability, safety, and comfort associated with a vehicle from an aerodynamics view point

Q. No	Question	M	CO	BL
1.	Analyze the weight reduction achieved by using magnesium, carbon fiber composites, and other alloys in a vehicle body and their impact on its strength and durability.	10	2	4
2.	Outline and analyze the importance of galvanization for preventing corrosion of vehicle bodies.	10	2	4
3.	Sketch and evaluate the external flow field around a race car and identify the hotspots for drag reduction.	10	3	5
4.	Evaluate the aerodynamic forces on a race car with a neat vectorial schematic and explain their relevance to the stability of the race car.	10	4	5
5.	Sketch the static pressure distribution on a sedan under yawed airflow conditions and evaluate the impact of the side wind force on vehicle stability,	10	4	5
