

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER 2012****Subject code: 731103****Date: 26/12/2012****Subject Name: Automotive Aerodynamics & Safety****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Explain in detail the aerodynamic consideration in body profiling. **07**
(b) Explain the concept of bluff body. **07**

- Q.2 (a)** Write short note on drag co-efficient of cars. **07**
(b) Write short note on dust flow patterns at the rear **07**

OR

- (b)** Explain Air resistance opposing the motion of a vehicle. **07**

- Q.3 (a)** Discuss in detail on car body drag reduction. **07**
(b) Explain deformation behavior of vehicle body. **07**

OR

- Q.3 (a)** Write short note on speed control devices **07**
(b) Define: (i) Square back drag (ii) Fast back drag (iii) Hatch back drag **07**
(iv) Notch back drag

- Q.4 (a)** Describe in detail various considerations that should be kept in mind when designing a passenger vehicle for safety **07**
(b) Explain briefly Automobile seat belts. **07**

OR

- Q.4 (a)** Discuss different types of Air Bag system with neat sketch. **07**
Q.4 (b) Differentiate between active safety and passive safety. **07**

- Q.5 (a)** Explain anti-skid braking system **07**
(b) Write short note on rear vehicle object detection system. **07**

OR

- Q.5 (a)** Write short note on Tilttable steering wheel **07**
(b) What are the functional requirements of central door locking? What are the door lock actuators? Draw a central door circuit along with remote operation. **07**
