

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2013

Subject code: 731103**Date: 05-06-2014****Subject Name: Automotive Aerodynamics and Safety****Time: 02:30 pm - 05:00 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 aerodynamic considerations in vehicle body design **07**
(b) Explain the role of aerodynamic drag in aerodynamics. **07**
- Q.2** (a) Explain 1. Notch back drag 2. Fast back drag 3. Hatch back drag **07**
4. Square back drag.
(b) Explain different types of resistances offered by the vehicle. **07**
- OR**
- (b) Explain the role of safety considerations in automobile body design. **07**
- Q.3** (a) Explain the safety techniques for passengers provided in the vehicles. **07**
(b) Give the comparison between active safety and passive safety. **07**
- OR**
- Q.3** (a) Explain the effect of deformation in vehicle body. **07**
(b) Explain briefly speed control devices for the vehicle. **07**
- Q.4** (a) Explain design aspects for bumper in vehicle body. **07**
(b) Explain design aspects and importance of seat belt in a vehicle. **07**
- OR**
- Q.4** (a) Explain the advance techniques used in steering system for safety. **07**
(b) Write a short note of anti-lock braking system. **07**
- Q.5** (a) Explain the central door locking system in a vehicle. **07**
(b) Explain the object detection system at the rear of vehicle. **07**
- OR**
- Q.5** (a) Explain the operation of air bag system provided in a vehicle. **07**
(b) Explain briefly aerodynamic shape analysis of the vehicle. **07**
