

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2013****Subject code: 731103****Date: 28-11-2013****Subject Name: Automotive Aerodynamics and 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) What is vehicle safety? Explain requirements and provisions for vehicle safety. **07**
(b) Explain types of drags faced by the vehicle. **07**
- Q.2** (a) Explain aerodynamic shape analysis of the vehicle. **07**
(b) Explain aerodynamic considerations used in body profile. **07**
- OR**
- (b) Explain automatic seat belt tightner. **07**
- Q.3** (a) Write a short note on “Vehicle aerodynamics”. **07**
(b) Explain different types of resistances overcome by the vehicle. **07**
- OR**
- Q.3** (a) Explain concept of bluff body. **07**
(b) Explain bumper design for safety. **07**
- Q.4** (a) Explain various speed control devices used in auto vehicle. **07**
(b) Explain hatch back, fast back and square back in the vehicle. **07**
- OR**
- Q.4** (a) Explain briefly automobile seat belts. **07**
(b) Explain air bag system with neat sketch. **07**
- Q.5** (a) Write a brief note on object detection system in auto vehicle. **07**
(b) Explain causes of rear end collision. **07**
- OR**
- Q.5** (a) Explain working and construction of anti skid braking system. **07**
(b) Give the difference between active safety and passive safety. **07**
