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## 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. (a) What is vehicle safety? Explain requirements and provisions for vehicle safety. **Q.1 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 07** Explain various speed control devics used in auto vehicle. **(b)** Explain hatch back, fast back and square back in the vehicle. 07 OR 0.4 (a) Explain briefly automobile seat belts. 07 **(b)** Explain air bag system with neat sketch. 07 (a) Write a brief note on object detection system in auto vehicle. **Q.5** 07

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(a) Explain working and construction of anti skid braking system.

(b) Give the difference between active safety and passive safety.

OR

**(b)** Explain causes of rear end collision.

0.5

**07** 

**07** 

**07**