

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013****Subject code: 731103****Date: 27-11-2014****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.

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| Q.1 | (a) Describe the trend of aerodynamics in modern automotive vehicles. | 07 |
| | (b) Draw and describe the low drag profiles for automotive vehicles. | 07 |
| Q.2 | (a) Describe exterior safety and interior safety of vehicle. | 07 |
| | (b) Describe the effect of front and rear wind shield angles. | 07 |
| | OR | |
| | (b) Describe the safety in recent automotive vehicles. | 07 |
| Q.3 | (a) Describe the perceptibility and operating safety in vehicles. | 07 |
| | (b) Draw and describe the dust flow patterns at the rear in vehicle. | 07 |
| | OR | |
| Q.3 | (a) What is hatch back and fast back ? - Explain. | 07 |
| | (b) Explain boat tailing and square back. | 07 |
| Q.4 | (a) Describe Electronic systems for activating air bags. | 07 |
| | (b) Describe with a neat sketch the collapsible steering column | 07 |
| | OR | |
| Q.4 | (a) Draw and describe the cruise speed control device in auto vehicle. | 07 |
| Q.4 | (b) Describe four channel, four sensor antiskid braking system. | 07 |
| Q.5 | (a) Explain the causes of rear end collision. | 07 |
| | (b) Discuss the frontal object detection and adaptive headlights | 07 |
| | OR | |
| Q.5 | (a) Discuss Automotive regulations. | 07 |
| | (b) Draw and describe safety seat belts. | 07 |
