Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2013**

**Subject code: 731103** **Date: 15-05-2013**

**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.**

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|---|---|---|---|
| **Q.1** | **(a)** | What are the safety considerations while designing the automobile body? Explain it. | **07** |
| | **(b)** | What is an aerodynamic shape analysis? Explain it. | **07** |
| **Q.2** | **(a)** | Explain the concept of bluff body. | **07** |
| | **(b)** | Write short note on car body drag reduction. | **07** |
| | | **OR** | |
| | **(b)** | Explain automatic seat belt Tightner. | **07** |
| **Q.3** | **(a)** | Explain deformation behavior of vehicle body. | **07** |
| | **(b)** | Define: (i)Square back drag (ii) Fast back drag (iii) Hatch back drag (iv) Notch back drag | **07** |
| | | **OR** | |
| | **(b)** | Describe the construction and working of an antilock brake system. | **07** |
| **Q.4** | **(a)** | Draw a central door circuit along with remote operation and brief the functional requirements of central door locking? Explain about the door lock actuators? | **07** |
| | **(b)** | Explain briefly about Automobile seat belts and its recent advancements. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Write a short note on active safety and passive safety in automotive vehicles. | **07** |
| **Q.4** | **(b)** | Discuss recent advancement in different types of Air Bag system with neat sketch. | **07** |
| **Q.5** | **(a)** | Explain Bumper design for safety. | **07** |
| | **(b)** | From the safety point of view what is the ideal location for the Fuel Tank in a Passenger car body? Explain it. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Write short note on speed control devices. | **07** |
| | **(b)** | Explain anti-skid braking system | **07** |

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