Seat No.: \_\_\_\_\_

Enrolment No.\_\_\_\_\_

## **GUJARAT TECHNOLOGICAL UNIVERSITY** ME – SEMESTER III (NEW) – EXAMINATION – WINTER-2016

|  |             | ME – SEMESTER III (NEW) – EXAMINATION – WIN  | TER-2016        |          |
|--|-------------|--|-----------------|----------|
| Subject Code: 2731104                          |             |  | Date:25/10/2016 |          |
| Subject Name: Automotive Aerodynamics & Safety |             |  |                 |          |
|  |             |  | 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)<br>(b)  | Explain the concept of Bluff body. Draw the aerodynamic car<br>Write short note on manually and remote operated central door     | -               | 07<br>07 |
| Q.2  | (a)<br>(b)  | Define: Square back drag, Notch back drag, Hatch back drag<br>Write short note on dust flow patterns at the rear side of vehicle | г.              | 07<br>07 |
|  | <b>(L</b> ) | OR   |                 | 07       |
|  | <b>(b)</b>  | Explain briefly on automobile seat belts system.   |                 | 07       |
| Q.3  | <b>(a)</b>  | Discuss on object detection system with braking system for veh   | nicle.          | 07       |
|  | <b>(b)</b>  | Write short note on bumper design for safety.  |                 | 07       |
| Q.3  | (a)         | <b>OR</b><br>Explain designing for minimum injury in case of accident.   |                 | 07       |
| Q.3  | (a)<br>(b)  | Explain designing for minimum injury in case of accident.<br>Explain electrical seat belt operation system.                      |                 | 07       |
| 0.4  |             | 1 1 2  |                 |          |
| Q.4  | (a)<br>(b)  | What is the important of collapsible steering column?<br>What is the important of air bag in modern car?                         |                 | 07<br>07 |
|  | (0)         | OR   |                 | 07       |
| Q.4  | (a)         | Differentiate active safety and passive safety.  |                 | 07       |
| C  | <b>(b)</b>  | What do you mean by anti-skid braking system?  |                 | 07       |
| Q.5  | (a)         | State and discuss on different exterior safety system.   |                 | 07       |
| ×  | (b)         | What are the safety precaution require during design of CNG b  | us?             | 07       |
|  |             | OR   |                 |          |
| Q.5  | <b>(a)</b>  | State and discuss on different interior safety system.   |                 | 07       |
|  | <b>(b)</b>  | Write short note on Tyre safety and its maintenances and service   | ce.             | 07       |

\*\*\*\*\*