

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M. Tech. Winter 2019- 20 Examination

Semester: 1**Subject Code: 203206133****Subject Name: Automotive Aerodynamics & Safety****Date: 19/12/2019****Time: 10:30 am to 1:00 pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1** A) Discuss the role of aerodynamics for automotive vehicle design. (05)
B) Explain the concept of bluff body. Draw the aerodynamic car profile. (05)
C) Discuss the effect of flow separation on a vehicle. (05)

- Q.2 Answer the following questions.** (Attempt any three) (Each five mark) (15)
A) What are the modern safety features used in advance vehicle?
B) Compare the drag of passenger car and other bluff bodies.
C) What is the purpose of wind tunnel? Name the various parts of it.
D) Describe wake effect and dust flow pattern at rear side of the vehicle.

- Q.3** A) Describe the motion of a vehicle resisted by Aerodynamic drag, rolling resistance and climbing resistance. (07)
B) Explain in details about strategies for aerodynamic development of cars in terms of detail optimization, shape optimization and drag reduction methods. (08)

OR

- B) What do you mean by anti skid braking system? Explain in brief. (08)

- Q.4** A) Differentiate between active safety and passive safety. Enlist active and passive safety feature of modern automobile. (07)

OR

- A) Discuss on object detection system with braking system for vehicle. (07)
B) Write short note on bumper design for safety. (08)