

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech., Summer 2017-18 Examination

Semester: 2**Subject Code: 03206154****Subject Name: Automotive Aerodynamics & Safety****Date: 25-05-2018****Time: 02:00PM to 04:30PM****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) What do you mean by vehicle aerodynamics? State practical objectives. **(05)**

B) What is stream lining of Auto body? State any two effects of streamlining on vehicle performance **(05)**

C) Why safety is required in automobile? Enlist various component of safety. **(05)**

Q.2 Answer the following questions. (Attempt any three) (Each five mark) **(15)**

A) Explain with neat sketch, pressure distribution in vehicle

B) What is the effect of flow separation on a vehicle?

C) What are the modifications required to reduce the amount of drag in automotive vehicle?

D) Explain the importance of energy absorbing bumper.

Q.3 A) Explain air resistance opposing the motion of a vehicle and derive the equation of drag coefficient. **(07)**

B) Explain collapsible Steering column used in automotive vehicle. **(08)**

OR

B) How airbag is useful in interior safety of an automotive vehicle? **(08)**

Q.4 A) Explain the causes of rear end collision. **(07)**

OR

A) What is Wind Tunnel Testing? Explain the importance of flow visualization in vehicle body design. **(07)**

B) Differentiate between active and passive safety. Also discuss various safety device of an automobile in detail. **(08)**