Reg. No.										

Manipal Institute of Technology, Manipal

Constituent Institute of Manipal University)

VII SEMESTER B.TECH (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: VEHICLE BODY ENGINEERING AND AERODYNAMICS

[AAE 451]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** the questions.
- Plot the graphs and draw the sketches wherever it is applicable

1A. Explain the velocity distribution of flow through a pipe. **(03)**

1B. Sketch and explain the behavior of the boundary layer along a thin flat plate. **(05)**

1C. Discuss the effect of separation of boundary layer flow at a wall. **(02)**

2A. Explain the variation in drag co-efficient of 2 bluff bodies with reference to circular disks and circular cylinders. **(04)**

2B. Describe and explain the main flow separations in regard with car body. **(03)**

2C. Discuss the main parameters which define the geometry of front windshield. **(03)**

3A. Explain the effect of yawing angle on the drag co-efficient of wheel with respect to stationary and rotating wheel. (plot the graph) **(04)**

3B. Explain the effect of front spoiler on drag and discuss the same with respect to the underbody of car. **(04)**

3C. Write a note on attachments connected to the external body of the vehicle. **(02)**

4A. Sketch and explain different components of wind tunnel and their functions. **(05)**

4B. Explain two road testing method used to calculate aerodynamic drag. **(03)**

4C. Write different methods used to avoid rust formation. **(02)**

5A. Depending upon average distance of routes, how the buses are Classified and list its properties **(05)**

5B. Explain three types of noise. **(03)**

5C. List methods employed to remove rust. **(02)**

6A. Sketch and explain Lateral loading with respect to car. **(03)**

6B. What all suitable modifications can be recommended to improve aerodynamic drag for cab and trailer? Explain **(04)**

6C. Explain different types of minibus or minivans **(03)**