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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(AE) (2011 Onwards) (Sem.-6)**AUTOMOTIVE AERODYNAMICS****Subject Code : BTAE-604****M.Code : 71220****Time : 3 Hrs.****Max. Marks : 60****INSTRUCTION TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A**1. Answer briefly :**

- (a) What do you mean by laminar flow?
- (b) What do you mean by wake region?
- (c) What are different modes to cool the engine?
- (d) Does the shape of a vehicle effect the efficiency?
- (e) What is the use of fasteners?
- (f) What is the range for rear wind shield angle?
- (g) Write the ways used to eliminate or reduce the vehicle wind noise.
- (h) Draw the stability diagram showing all the moments of the vehicle taking a turn on a banking curved road. Also consider the side wind effect.
- (i) What is the main limitation of simulation?
- (j) What do you mean by scaled models?

SECTION-B

2. Describe the process of cooling of transverse and rear engine.
3. Explain the car as a bluff body also discuss the different types of drag forces on it.
4. Explain the effect of dirt accumulation on the vehicle.
5. Write a short on Fast Back and Square Back.
6. Explain the different measurement techniques used in wind tunnel and also describe the equipments used for it.

SECTION-C

7. With the help of a suitable example, explain the stress calculation for a full-scale wind tunnel model. Also mention the equipments and transducers used for the same.
8. Explain with a neat sketch, how front-end modification helps the vehicle to reduce the drag. Also explain the dust flow pattern at the rear of a vehicle.
9. Explain the following terms in detail :
 - a) Bluff body
 - b) Low drag profile
 - c) Drag coefficient

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.