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B.Tech. (AE) (2011 Onwards) (Sem.-6)
VEHICLE SAFETY ENGINEERING
Subject Code: BTAE-605

Paper ID : [A2384]

Time: 3 Hrs. Max. Marks: 60

INSTRUCTION TO CANDIDATES:

- 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. Write briefly:

- (a) What is the full form of ABS?
- (b) What are the different possible positions of the engine?
- (c) What is the use of collapsible steering column?
- (d) Name two types of passive safety concepts.
- (e) What is the optimum distance between the two vehicles to avoid the collision?
- (f) What is the advantage of tilt able steering wheel?
- (g) Which factors affect the tyre pressure control system?
- (h) What are the different possible locations of the air bags?
- (i) What is the use of safety sandwich construction?
- (j) What is the limiting speed of collision for the activation of air bags?

SECTION-B

- 2. Explain in details the monocoque chassis construction.
- 3. Explain in detail any two types of active safety concepts.
- 4. Explain how the seat belt tightening system works with a neat sketch.
- 5. The coefficient of friction between the tyres of a car and the road is 0.5. The driver applied the brakes and car stopping distance is 1 m. What is the velocity of the car?
- 6. Explain the interaction of object detection with breaking system with the help of Schematic diagram.

SECTION-C

- 7. Write short notes on:
 - a) Electronic Brake force Distribution
 - b) Collision Warning system
- 8. Define Deceleration. Explain the deceleration of vehicle inside the passenger compartment with a suitable example while collision with stationary obstacle.
- 9. Explain the deformation behavior of the vehicle body after collision with the moving body when the collision occurs from
 - a) Front
 - b) Rear

Also suggest the correcting measures to be taken.