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Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017
Vehicle Body Engineering and Safety

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Draw the layouts of bus and coach bodies and explain. (10 Marks)
b. Discuss the classification of car bodies with neat sketches and mention their features. (10 Marks)
- 2 a. Discuss the salient features of the following materials used for body work of an automobile :
i) aluminium alloy sheet ii) sheet steel iii) rubber iv) timber. (10 Marks)
b. Why are the composites being increasingly used in automotive construction? Explain the composite and hybrid materials. (10 Marks)
- 3 a. With a neat sketch discuss various forces and moments acting on a vehicle in motion. (10 Marks)
b. Explain the wind tunnel test with a neat sketch to determine the drag coefficient of a vehicle. (10 Marks)
- 4 a. Explain with a suitable sketches, stress analysis of a closed integral vehicle structure. (10 Marks)
b. Discuss the following loading cases for vehicle body design with suitable sketches.
i) symmetrical loading ii) asymmetrical loading. (10 Marks)

PART – B

- 5 a. Sketch and explain the concept of visibility of a driver for both front and rear in a vehicle. (08 Marks)
b. Discuss the various factors to be considered for designing the drivers seating position. Draw a neat sketch of a driver seat with relative dimensions for three classes of vehicle. (12 Marks)
- 6 a. Explain the longitudinal and lateral stability of vehicle. (10 Marks)
b. Explain how engine location affects stability. (10 Marks)
- 7 a. What are the various sources of noise in a vehicle? Explain. (10 Marks)
b. Discuss the various methods used for controlling noise and vibration in a vehicle. (10 Marks)
- 8 a. List the various safely features in a vehicle for driver, passenger and pedestrians Explain any two in brief. (12 Marks)
b. What is a bumper? Explain different types of bumpers. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.