



10AU72

Seventh Semester B.E. Degree Examination, July/August 2021  
**Vehicle Body Engineering and Safety**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 1 a. How do you classify the coachwork? Explain. (08 Marks)  
b. Discuss the classification of coach and bus body according to seating and loading capacity. (12 Marks)
- 2 a. List the various materials used for construction of vehicle body. Explain in detail. (15 Marks)  
b. Explain corrosion and its prevention. (05 Marks)
- 3 a. Discuss the factors responsible for aerodynamics drag. (08 Marks)  
b. With neat sketch, explain the aerodynamic forces and moments acting on a car body and their effects. (12 Marks)
- 4 a. What are the different types of vehicle body structure? Explain with neat sketches. (10 Marks)  
b. Discuss the following loading cases for vehicles body design:
  - i) Symmetric loading
  - ii) Asymmetric loading
  - iii) Longitudinal loading
  - iv) Static loading with suitable sketches. (10 Marks)
- 5 a. Explain the interior Ergonomic of driver's frontal and near visibility in a vehicle, with suitable sketches. (10 Marks)  
b. What are the different methods to improve visibility? (05 Marks)  
c. Explain briefly the window winding concept and seat Adjustment mechanisms. (05 Marks)
- 6 a. Discuss different types of stability in brief. (10 Marks)  
b. What are the effects of operating factors on lateral stability? Explain how engine location affects stability. (10 Marks)
- 7 a. List and explain the various sources of noise in a vehicle. (08 Marks)  
b. Write short notes on : i) Noise level measurement ii) Designing against fatigue  
iii) Methods of noise suppression. (12 Marks)
- 8 a. What is bumper? Explain different types of bumper. (10 Marks)  
b. Discuss the laws and measures to be adopted for the safety of a vehicle. (10 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.