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## Eighth Semester B.E. Degree Examination, Aug./Sept.2020 Vehicle Body Engineering and Safety

Time: 3 hrs.

Max. Marks: 80

- Note: i) For Regular Students: Answer any FIVE full questions irrespective of modules.  
ii) For Arrear Students : Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Discuss the classification of commercial vehicle bodies with a neat sketches and mention their features. (08 Marks)  
b. Draw the layout of Bus and Coach bodies and explain. (08 Marks)
- 2 a. Write the classification of cars and explain. (08 Marks)  
b. Explain the terms used in body building construction with the help of sketch. (08 Marks)

### Module-2

- 3 a. What are the different types of glasses and rubbers used in vehicle body construction? Explain. (08 Marks)  
b. Explain the properties of Aluminium alloy and steel. (08 Marks)
- 4 a. Explain the different vehicle body constructions. (08 Marks)  
b. Explain the following with its features:  
i) Metal matrix composites ii) Thermoplastics (08 Marks)

### Module-3

- 5 a. Explain with suitable sketches, aerodynamic forces and moments acting on vehicle body. (08 Marks)  
b. Explain the wind tunnel test to determine the drag coefficient of a vehicle. (08 Marks)
- 6 a. With a suitable sketches describe the symmetric and asymmetric loads acting on a car body structure. (08 Marks)  
b. Explain the various body optimization techniques for minimum drag. (08 Marks)

### Module-4

- 7 a. Explain the complete design consideration for driver seat of a car with neat sketch. (08 Marks)  
b. Sketch and explain the concept of visibility of a driver for front and rear. (08 Marks)
- 8 a. Describe, how engine location affects the stability. (08 Marks)  
b. Briefly explain the longitudinal stability and lateral stability. (08 Marks)

### Module-5

- 9 a. Briefly explain the various sources of noise in a vehicle. (08 Marks)  
b. What are the methods used for controlling the noise and vibration in article? Explain. (08 Marks)
- 10 a. What is a Bumper? Explain the different types of bumper. (08 Marks)  
b. Briefly explain passive restraint systems. (08 Marks)

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