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## Eighth Semester B.E. Degree Examination, June/July 2019 Vehicle Body Engineering and Safety

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

### Module-1

- 1 a. What are the special features of different types of car bodies? Explain them briefly. (08 Marks)
- b. Explain the terms : Angle of approach, angle of departure and ground clearance. (08 Marks)

**OR**

- 2 a. What are semi-integral and integral methods of construction of a vehicle body? State their merits and demerit. (08 Marks)
- b. Explain the following terms in body building construction, with a sketch.  
i) seat rail    ii) skirt rail    iii) wheel arch    iv) Rub rail. (08 Marks)

### Module-2

- 3 a. Explain the use of steel and alloy steels in vehicle body construction. (08 Marks)
- b. What are different types of glasses used in body construction? Explain. (08 Marks)

**OR**

- 4 a. What are the different types of plastics used in body construction? Explain the specifications and properties. (08 Marks)
- b. Write a short notes on i) Paints    ii) Anti-corrosive materials. (08 Marks)

### Module-3

- 5 a. With a neat sketch discuss various forces and moments acting on a vehicle in motion. (08 Marks)
- b. What is aerodynamic drag? Explain it with a suitable graph of drag force Vs vehicle speed. (08 Marks)

**OR**

- 6 a. State the requirements of modern vehicle design and describe structural members of a double decker vehicle body. (08 Marks)
- b. What are the different loads acting on vehicle body structure? Explain in detail. (08 Marks)

### Module-4

- 7 a. Discuss various factors to be considered for a drivers seating position. Draw a neat sketch with relative dimensions for three classes of vehicle. (10 Marks)
- b. Sketch and explain the concept of visibility of a driver for both front and rear in a vehicle. (06 Marks)

**OR**

- 8 a. Explain longitudinal and lateral stability of a vehicle with a sketch. (08 Marks)
- b. With a sketch explain steering geometry. (08 Marks)

### Module-5

- 9 a. Explain the various sources of noise in a vehicle. (08 Marks)
- b. Explain how rubber is used as an isolator in a vehicle. (08 Marks)

**OR**

- 10 a. Discuss the design consideration for crash worthiness (08 Marks)
- b. With a sketch explain how an air bag system provides safety to a driver. (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.