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Sixth Semester B.E. Degree Examination, June/July 2024 Vehicle Body Engineering and Safety

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. With a neat sketch, explain the layout of bus and coach bodies. (10 Marks)
- b. Explain the following terms with sketch :
 i) Wheel arch ii) Cant rail iii) Seat rail iv) Rub rail v) Skirt rail. (10 Marks)

OR

- 2 a. Discuss the classification of car bodies with neat sketches. (10 Marks)
- b. Explain in detail Semi – integral and Integral method of construction of a vehicle body. (10 Marks)

Module-2

- 3 a. Explain the use of steel and alloy steels in vehicle body construction. (10 Marks)
- b. What are the different types of plastics used in vehicle body construction? Explain the properties. (10 Marks)

OR

- 4 a. What are the salient features of glass reinforced plastics? Discuss. (10 Marks)
- b. With a neat block diagram, explain the process of painting. (10 Marks)

Module-3

- 5 a. Explain with a suitable sketch, Aerodynamic forces and Moments acting on vehicle body with their effects. (10 Marks)
- b. Explain Wind tunnel test with a neat sketch to determine the drag co-efficient of a vehicle. (10 Marks)

OR

- 6 a. Explain in detail different loads acting on Vehicle body structure. (10 Marks)
- b. Explain with neat sketch, the stress analysis of a closed integral vehicle structure. (10 Marks)

Module-4

- 7 a. Sketch and explain the driver's seat position in relation to the steering wheel and pedal in case of passenger car. (10 Marks)
- b. Explain the following :
 i) Seating dimensions.
 ii) Interior ergonomics for automotive vehicles. (10 Marks)

OR

- 8 a. Briefly explain longitudinal and lateral stability of a vehicle with a sketch. (10 Marks)
- b. With neat sketch, explain steering geometry. (10 Marks)

Module-5

- 9 a. Explain the various sources of noise in a vehicle. (10 Marks)
b. What are the methods used for controlling the noise and vibration in vehicle? Explain. (10 Marks)

OR

- 10 a. Discuss the safety aspects of a bumper design and also explain the different types of bumper. (10 Marks)
b. Explain in detail side impact analysis and energy absorbent foams. (10 Marks)

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