CBCS SCHEME

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21AU63

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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