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Eighth Semester B.E. Degree Examination, November 2020
Vehicle Body Engineering and Safety

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions irrespective of modules.

Module-1

1   a.   Discuss the different seating layouts of busses with net sketches.   **(08 Marks)**
    b.   Summarize the different styling forms of a car with a neat sketches.   **(08 Marks)**

2   a.   Describe the following terms:
         (i)   Angle of Approach
         (ii)   Angle of Departure
         (iii) Ground clearance
         (iv)   Floor longitudes   **(08 Marks)**
    b.   With a neat sketch, explain the following terms:
         (i)   Rub Rail
         (ii)   Skirt Rail
         (iii) Truss Panel
         (iv)   Wheel Arch Structure   **(08 Marks)**

Module-2

3   a.   Mention the use of steel and alloy steels in vehicle body construction.   **(08 Marks)**
    b.   What are the different types of plastics used in vehicle body construction? Explain the
         specification and properties.   **(08 Marks)**

4   a.   With a neat block diagram, explain the process of painting and selection of painting.
                                                                                     (08 Marks)
    b.   (i)   Write short notes on sandwich panel construction.
         (ii) What are the factors to be considered in selection of paint?   **(08 Marks)**

Module-3

5   a.   Analyze the Aerodynamic forces and moments acting on a vehicle body. Explain them with
         a suitable sketch.   **(08 Marks)**
    b.   Determine the coefficient of drag for wind tunnel test with a schematic diagram.   **(08 Marks)**

6   a.   Mention different types of vehicle body structure. Justify with neat sketches.   **(08 Marks)**
    b.   Discuss the following loading cases for vehicle body design:
         (i)   Symmetric loading
         (ii)   Asymmetric loading
         (iii) Longitudinal loading
         (iv)   Stating loading, with suitable sketches.   **(08 Marks)**

Module-4

7   a. Explain the interior ergonomics of driver's Frontal and Rear visibility in a vehicle, with suitable sketches. (08 Marks)
    b. Describe briefly the window winding concept and seat adjustment mechanisms. (08 Marks)

8   a. Discuss different types of stabilities in brief. (08 Marks)
    b. What are the effects of operating factors on lateral stability? Explain how engine location affects stability. (08 Marks)

Module-5

9   a. Understand the various sources of noise in a vehicle. Explain. (08 Marks)
    b. Describe various methods used for controlling noise and vibration produced in a vehicle during motion. (08 Marks)

10 a. Summarize the design considerations for crash worthiness. (08 Marks)
    b. Define the Bumper system. Explain different types of bumpers with a neat sketch. (08 Marks)

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