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15AU81

Eighth Semester B.E. Degree Examination, July/August 2022
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. Draw the layouts of buses coach and coach with different seating arrangement and loading capacity. (08 Marks)
- b. List and explain the different types of commercial vehicles used for goods transportation, with appropriate body arrangement. (08 Marks)

OR

- 2 a. Explain the following terms related to body construction:
- (i) Ground clearance
 - (ii) Angle of approach
 - (iii) Floor longitudes
 - (iv) Seat rail
- b. Write short notes on:
- (i) Skirt rail
 - (ii) Truss panel
 - (iii) Wheel arch.
 - (iv) Gussets
- (08 Marks)
- (08 Marks)

Module-2

- 3 a. How the properties of aluminium alloys are suitable for body constructional works, justify. (08 Marks)
- b. Discuss the suitability of alloy steels, plastics and wood in the body construction work. (08 Marks)

OR

- 4 a. Explain the importance and uses of following materials in the coach work:
- (i) Glass
 - (ii) Thermoplastics
 - (iii) Load bearing plastics
 - (iv) PUR foams
- b. List and explain the materials used for corrosion prevention, with appropriate properties. (08 Marks)
- (08 Marks)

Module-3

- 5 a. What is aerodynamics? Discuss the importance of aerodynamic study. (08 Marks)
- b. List out the various forces and moments acting on a vehicle, discuss the effects of same. (08 Marks)

OR

- 6 a. Explain the aerodynamics test procedure with the help of wind tunnel test rig. (08 Marks)
- b. Discuss different loads acting and their effects on the vehicle stability. (08 Marks)

Module-4

- 7 a. What is ergonomics? Describe the various arrangements adopted in the interior of the vehicle. (08 Marks)
- b. Explain the following terms:
- (i) Methods of improving visibility
 - (ii) Window winding mechanism
- (08 Marks)

OR

- 8 a. Illustrate the various factors affecting the longitudinal and lateral stability of a vehicle in motion. (08 Marks)
- b. How the mass distribution and engine location effects the stability of a vehicle? (08 Marks)

Module-5

- 9 a. List out the sources of noise and explain the noise level measurement technique in vehicles. (08 Marks)
- b. Discuss the noise suppression methods adopted in vehicles. (08 Marks)

OR

- 10 a. Explain the design for crash worthiness of a vehicle. (08 Marks)
- b. Describe the different safety methods adopted for passenger vehicles according to the norms. (08 Marks)
