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15AU81

Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
Vehicle body Engineering and Safety

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the classification of passenger cars with sketches. (08 Marks)
b. What are the different methods of construction of a vehicle body? Explain. (08 Marks)

OR

- 2 a. Explain the following :
i) Angle departure ii) Angle of approach iii) Cross bearers iv) Floor longitudinal. (08 Marks)
b. Discuss the classification of bus body according to seating and loading capacity. (08 Marks)

Module-2

- 3 a. List the various materials used for construction of vehicle body. Explain any four. (08 Marks)
b. With a neat diagram, explain the process of painting. (08 Marks)

OR

- 4 a. Explain the usage of timber in vehicle body construction. (08 Marks)
b. Explain various anti-corrosion methods. (08 Marks)

Module-3

- 5 a. What are the various aerodynamic forces and moments that act on a car body. Illustrate with relevant equations? (08 Marks)
b. Explain how optimization techniques can be used for reducing the drag due to forebody and front windscreen of a car. (08 Marks)

OR

- 6 a. Discuss the types of load carrying structures on the basis of stress analysis with layouts. (08 Marks)
b. Explain the following loading cases for vehicle body design, with neat sketches. (08 Marks)
i) Symmetric loading ii) Asymmetric loading.

Module-4

- 7 a. Indicate the important dimensions of passenger car driver seat with a neat sketch. (08 Marks)
b. With a neat sketches, explain a window winding mechanism. (08 Marks)

OR

- 8 a. Discuss the stability of a vehicle when taking turn on a curvilinear path. (08 Marks)
b. Explain the longitudinal and lateral stability of a vehicle. (08 Marks)

Module-5

- 9 a. Discuss various sources of vehicle noise and their measurement techniques. (12 Marks)
b. Write a short note on body structural vibration. (04 Marks)

OR

- 10 a. Explain various safety devices used in vehicle. (08 Marks)
b. Discuss the design consideration for crashworthiness. (08 Marks)

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.