

Code No: **R204124A**

R20

Set No. 1

IV B.Tech I Semester Regular Examinations, January – 2024

AUTOMOBILE SAFETY

(PE-III: Automobile Engineering & OE- III for other Branches)

Time: 3 hours

Max. Marks: 70

*Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks*

UNIT - I

- 1 a) Explain the primary principles considered in designing an automobile body for safety. [7]
b) What materials and design principles are typically employed in creating the safest automobile structure? [7]

(OR)

- 2 a) Outline the key safety standards and regulations governing vehicle safety worldwide. [7]
b) Explain the concept of the "crumple zone" in vehicle design. [7]

UNIT - II

- 3 a) Discuss the significance of vehicle safety in reducing the impact of collisions on occupants. [7]
b) How do safety features like airbags and seat belts contribute to minimize injuries during impacts? [7]

(OR)

- 4 a) Explain the significance of conducting structural vibration analysis in automobiles. [7]
b) Define fatigue and its relevance in the context of vehicle components. [7]

UNIT - III

- 5 a) Explain the concept of Active safety in automobiles. [7]
b) Explain the functionality of an automatic traction control system in vehicles. [7]

(OR)

- 6 a) Analyze the importance of interior safety features in automobiles. [7]
b) How do features like airbags, seat belts and headrests protect occupants? [7]



UNIT - IV

- 7 a) Explain the working principle behind collision warning systems in automobiles. [7]
b) Describe the technology involved in frontal object detection systems in automobiles. [7]

(OR)

- 8 a) How do rear vehicle object detection systems improve overall safety, especially during parking or reversing? [7]
b) List the benefits and drawbacks of collision warning systems in automobiles [7]

UNIT - V

- 9 a) Explain the significance of the steering adjustment system in modern automobiles. [7]
b) Explain the role and features of an environment information system in vehicles. [7]

(OR)

- 10 a) Describe the advantages of an automatic climate control system in vehicles. How does this system contribute to passenger comfort? [7]
b) Explain the mechanism behind a central locking system. [7]