

(3 Hours)

Total Marks: - 80

- N.B: (1) Question no.1 is compulsory.  
(2) Attempt any three out of remaining five questions.  
(3) Figures to the right indicate full marks.  
(4) Illustrate your answers with sketches wherever necessary.

- Q.1 Answer any **four** of the following:
- a Explain the significance of crash energy. 05
  - b Explain hydge sled test. 05
  - c Explain redundant system with an example. 05
  - d Explain occupant simulation in the context of vehicle safety. 05
  - e Explain fail safe mechanism with an example. 05
- Q.2 a Explain in detail public health analogy. 10
- b Explain in detail vehicle accident investigation and reconstruction. 10
- Q.3 a Explain any one automotive active safety system. 10
- b Explain self-aligning head restraint in the context of vehicle safety 10
- Q.4 a Explain the evolution of dummies used in impact testing. 10
- b Explain the significance of H- point testing. 10
- Q.5 a Explain risk communication with examples. 10
- b Explain the working principle of airbag and different types of airbags. 10
- Q.6 a Explain the design requirements for frontal collision. 10
- b Explain with a case study key issues of vehicle safety in India. 10
-