

(3 Hours)

Total Marks : 80

Please check whether you have got the right question paper.

- 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 causes of accidents for all types of vehicles. 05
 - b Explain the significance of head restraint position. 05
 - c Explain the application of any two software used in accident reconstruction analysis. 05
 - d Explain how accident data is interpreted? 05
 - e Explain injury tolerance limits with an example. 05
- Q.2**
- a Explain the Euro-NCAP test procedure for pedestrian protection. 10
 - b Compare quasistatic seat test with hydge sled test. 10
- Q.3**
- a Explain the main steps in the reverse projection photogrammetry process. 10
 - b Explain the significance of occupant simulation and biomechanics. 10
- Q.4**
- a Explain the design requirements for frontal collision. 10
 - b Explain in detail the working of antilock braking system. How wheel slip is calculated? 10
- Q.5**
- a Explain any one recent innovation in automotive safety system. 10
 - b Explain any five types of illustrative errors. 10
- Q.6**
- a Explain in detail the four aspects of universal design. 10
 - b Explain key issues of vehicle safety in India. Support your answer with a case study. 10