

Nirma University

Institute of Technology

Semester End Examination (IR), February - 2022

B. Tech. in Electrical Engineering / Mechanical Engineering, Semester-VII
2CLOE28 Road Safety and Management

Roll /
Exam No.

Supervisor's initial
with date

Time: 2 Hours

Max. Marks: 50

Instructions:

1. Attempt all questions.
2. Figures to right indicate full marks.
3. Draw neat sketches wherever necessary.
4. Assume additional data, if required and mention the same.

Q-1. Answer the following.

[25]

[A] Explain Concept of Passenger Car Unit (PCU) and factors affecting PCU [05]
CO2BL4 in detail.

[B] List and discuss the cross-sectional elements of the highway with the [06]
CO1BL5 help of a neat sketch.

OR

[B] The speeds of overtaking and overtaken vehicles are 95 and 45 kmph [06]
CO1BL5 respectively on a two-way traffic. Determine safe overtaking sight distance. Take $A = 4.00$ kmph/sec or $a = 1.11$ m/s²

[C] Determine the minimum sight distance required to avoid a head on [04]
CO1BL4 collision of two cars approaching from the opposite directions at 75 and 45 kmph. Assume coefficient of friction of 0.7 and a brake efficiency of 50 percent.

[D] List the various objectives of conducting accident studies. [05]
CO3BL3

[E] Discuss the importance of Road Safety Audit in your words. [05]
CO3BL4

Q.2 Answer the following.**[25]**

[A] Two vehicles travelling in the same lane have masses 3000 kg (rear vehicle) and 2500 kg (leader vehicle). After collision, the velocities of rear vehicle and leader vehicle are 25 kmph and 56 kmph respectively. The coefficient of restitution of the two-vehicle system is assumed to be 0.6. Determine the pre-collision speed of the two vehicles. [05]

[B] List the benefits of road safety audit. [06]

OR

[B] Explain how risk is assessed before deciding whether road safety audit is needed. [06]

[C] Discuss various types of road markings with a neat sketch. [05]

[D] Classify various types of regulatory signs for traffic control. [04]

[E] Explain the common reasons attributed to road crashes in India. [05]