

# Nirma University

## Institute of Technology

Semester End Examination (IR), December - 2021

B. Tech. in CH / ME / EE / EC / CSE, 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] The following table gives the consolidated data of spot speed studies on a section of road. Determine: a) Upper value of speed limit b) Lower value of speed limit and c) Design speed. (Use Graph Paper) [06]

CO2BL5

Speed range, kmph	No. of Observations	Speed range, kmph	No. of Observations
0-10	12	50-60	378
10-20	32	60-70	215
20-30	83	70-80	92
30-40	243	80-90	70
40-50	412	90-100	25

- [B] Discuss various Automatic Traffic Measurement Technologies in detail. [06]

CO1BL5

**OR**

- [B] Determine safe overtaking sight distance for a design speed of 88 kmph. Assume all other data suitably as per IRC recommendation. Take  $A = 3.16$  kmph/sec or  $a = 0.99$  m/s<sup>2</sup> [06]

CO1BL5

- [C] List the applications of Origin and Destination Studies (Any Six). [03]

CO2BL4

- [D] Explain how various vehicular defects can lead to road accidents. [05]

CO3BL4

- [E] List the objectives of road safety audit. [05]

CO3BL4

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

[A] CO3BL5 The motor vehicle fuel consumption in a city is 5.082 million litre. In the year 2020, there were 312,543 road accidents, 3114 fatalities and 355,799 injuries. The city has 6,721,049 motor vehicle registrations and an estimated population of 18,190,238. Vehicle-kms of travel was 6,213,322,221. Calculate death rate based on vehicle registration, death rate based on population and accident rate based on vehicle-kms of travel (mention the units properly). [05]

[B] CO4BL4 Explain the requirements of traffic control devices. [06]

**OR**

[B] CO4BL4 Enumerate the factors affecting night visibility. [06]

[C] CO1BL3 Summarize in your own words the major weaknesses in planning and design of road network in India. [05]

[D] CO3BL4 Classify various stages of road safety audit. [04]

[E] CO4BL4 Explain height and overhang of street light mountings with a diagram. [05]