Nirma University

Institute of Technology

Sessional Examination (IR), October - 2023

B. Tech. (All Programmes), Semester – VII

2CLOE28: ROAD SAFETY AND MANAGEMENT

Roll / Exam No.		Supervisor's Initials with Date	

Time: 2 Hours | Max. Marks: 50

Instructions:
1. Attempt all questions in bullet point wherever applicable.
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] CO2BL4	The speed of the overtaking and overtaken vehicles are 80km/h and 40km/h. Acceleration = 0.99m/s^2. – calculate OSD for (a) two-lane undivided road (b) four-lane divided road – mention minimum length of the overtaking zone – draw a neat sketch of the overtaking zone	[06]
[B] CO1BL4	A vertical summit curve is to be designed when two grades, 4% and -5% meet on a highway. Calculate the length of summit curve needed to provide SSD for a design speed of 80km/h.	[06]
[C] CO2BL4	While aligning a highway in a built-up area, it was necessary to provide a horizontal curve of radius 350m. The design speed is 65km/h. Length of wheel base is 6m and width of pavement is 10.5m. Design the following geometric features. i) superelevation ii) extra widening of pavement iii) length of transition curve.	[06]
[D] CO2BL3	Describe the overturning and transverse skidding criteria considered for design of superelevation. Also derive the expression: $e + f = v^2/gR$	[07]
Q-2.	**Answer the following.**	**[25]**
[A] CO4BL2	Elaborate on the functions of traffic signs. Describe the types of traffic signs with minimum one example of each type with sketch and also shape, colour pattern, etc.	[07]
[B] CO4BL2	Describe the following: – importance of road marking – parking regulations – usefulness of accident data	[06]
[C] CO2BL2	Discuss the need and methods of traffic volume studies. Define AADT, ADT, AAWT and AWT.	[06]
[D] CO2BL2	Discuss the various macroscopic and microscopic parameters of a traffic stream. Illustrate and explain the relation between flow and density with help of a diagram.	[06]