


Name: Enrolment No:			
UPES End Semester Examination, May 2024			
Course: Safety in Rail & Road Transport Program: B Tech- Fire & Safety Engineering Course Code: HSFS4003		Semester: VIII Time: 03 hrs. Max. Marks: 100	
Instructions: Attempt all the questions.			
SECTION A (5Qx4M=20Marks)			
S. No.	Questions	Marks	CO
Q 1	Define rail creep and its impact on railway tracks	4	CO1
Q 2	Explain the significance of coning of wheels in railway engineering	4	CO1
Q 3	Develop a comprehensive maintenance plan for railway tracks, including rail inspection, sleeper replacement, and ballast maintenance.	4	CO1
Q 4	Explain the concept of super-elevation in road design.	4	CO2
Q 5	Explain the concept of centralized traffic control systems in railways	4	CO1
SECTION B (4Qx10M= 40 Marks)			
Q 6	Explain in detail of factors effecting spot speed study in traffic engineering.	10	CO1
Q 7	Evaluate the effectiveness of current transition curve designs in maintaining vehicle comfort and safety.	10	CO4
Q 8	Explain with example, how do signaling and interlocking systems enhance railway safety?	10	CO2
Q 9	Being an expert, suggests the important consideration while planning and design of gradient. OR Wear and tear of rails are major concerns for the Indian Railways, Discuss in detail of cause of wear and tear of rails.	10	CO3
SECTION-C (2Qx20M=40 Marks)			
Q 10	National Highway 7 (NH7), a major highway connecting Delhi to Kolkata, traverses through the city of Agra in Uttar Pradesh, India. Currently classified as a		

	<p>four-lane highway, NH7 passes through congested urban areas, creating bottlenecks, noise pollution, and safety hazards for pedestrians and cyclists. Due to these issues, the government is considering reclassifying the highway section within Agra city limits to a six-lane urban expressway with controlled access.</p> <p>Based on the above case study, share the challenges and benefits of reclassifying an existing highway.</p>	20	CO5
Q 11	<p>Propose modifications to the highway classification system to better suit future transportation needs.</p> <p style="text-align: center;">OR</p> <p>Do the assessment of various sleepers used in the Indian railways and conclude with the best-suited requirements with respect to safety.</p>	20	CO4