R22 Regulation *Subject code: 4P5AA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Regular Examinations, December 2024

TRANSPORTATION ENGINEERING

(CE)

Maximum Marks: 60 Date:03.01.2025 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

	Part-A	CO	Bloom Tx
All the following questions carry equal marks (10X1M=10 Marks)			
1.a)	Name two road network patterns commonly used in highway development.	1	L1
b)	Why are engineering surveys important in the initial stages of highway development?	1	L1
c)	Name two types of sight distances considered in highway geometric design.	2	L1
d)	What the purpose of transition curves in highway design.	2	L1
e)	Name two common methods used to design traffic signals.	3	L1
f)	What the purpose of road markings in traffic management.	3	L1
g)	What is the purpose of channelization at intersections?	4	L1
h)	What the difference between grade-separated and at-grade intersections.	4	L1
i)	Name the components of a rigid pavement structure.	5	L1
j)	Why is stress distribution different in flexible and rigid pavements?	5	L1
	Part-B		
Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
2	Explain the necessity for highway planning in India and how it contributes to socio-economic growth. Illustrate with examples of recent highway projects. [10M]	1	L2
	OR		
3	a) Evaluate the importance of highway alignment and the factors influencing alignment decisions. Why is it crucial to consider geographical, economic, and environmental factors in alignment? [5M] b) Examine the role of engineering surveys in highway planning and development. What challenges can arise during these surveys, and how do they impact the overall project timeline [5M]	1	L3 L3
4	Analyze the relationship between stopping sight distance (SSD) and overtaking sight distance (OSD) in highway design. How do these parameters influence road safety and traffic flow? [10M]	2	L4
	OR		
5	a) Describe the key elements of a highway cross-section. How do each of these elements contribute to overall road stability and safety? [5M]	2	L2

	b) Examine the factors that influence the design of super elevation in a highway curve. Why is super elevation critical for vehicle stability, especially on curved roads? [5M]		L3
6	Discuss common causes of road accidents and suggest preventive measures that traffic engineers can implement. How do these measures reduce accident frequency and severity? [10M]	3	L2
	OR		
7	Examine the different types of road traffic signs and their specifications. How do these signs contribute to improved traffic flow and safety? [10M]	3	L2
8	Explain the objectives of channelization in intersection design. How do traffic islands contribute to effective channelization, and what criteria are used in their design? [10M]	4	L2
	OR		
9	Examine the concept of grade-separated intersections and discuss how they differ from at-grade intersections. What are the benefits and drawbacks of each type in terms of traffic flow and safety? [10M]	4	L2
10	Describe the primary components of a flexible pavement structure and explain the function of each layer in ensuring pavement durability. [10M]	5	L2
	OR		
11	Discuss the design considerations for rigid pavements according to IRC guidelines. How do these guidelines help in creating long-lasting and cost-effective pavements? [10M]	5	L2