Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Fourth Semester

Civil Engineering

CE3405 - Highway and Railway Engineering

Regulations - 2021

Duration : 3 Hrs ***Maximum : 100 Marks***

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	How are roads classified in Nagpur plan?	L2	1	2
2.	What are the recommendations of Jayakar Committee?	L2	1	2
3.	What is meant by widening of pavement on horizontal curves?	L2	2	2
4.	Find super elevation on a horizontal circular curve of 150 m radius for design speed of 65Kmph with a coefficient of friction 0.15.	L1	2	2
5.	Enlist the two types of deterioration takes place in highway pavements?	L2	3	2
6.	What are the classifications of pavement maintenance?	L2	3	2
7.	List out the types of Sleepers.	L1	4	2
8.	What are the different materials used for Ballast?	L2	4	2
9.	Classify the Crossings?	L2	5	2
10.	List the different classifications of railway stations?	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	Illustrative with neat sketches and Explain, how obligatory points control a highway alignment.	L2	1	16
		Or			
	b	Summarize on the following i) Indian Road Congress ii) Central Road Research Institute (CRRI), and iii) Highway Research Board.	L2	1	16
12.	a	The speed of overtaking and over taken vehicles are 70 and 40 kmph, respectively on a two-way traffic road. If the acceleration of overtaking vehicle is 0.99m/sec2. Calculate SSD, OSD and ISD.	L1	2	16
		Or			
	b	What is meant by extra widening of curves? Derive the expression for extra widening of curves.	L1	2	16

13.	a		Explain the step by step construction procedure of WBM?	L2	3	16
			Or			
	b		Briefly explain pavement evaluation for rigid pavements.	L2	3	16
14.	a	i	A BG curved railway track has a 4° curvature and 12cm cant. Maximum Permissible speed on the curve is 85Km/hr. Calculate the length of the transition curve.	L4	4	8
		ii	An 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of a B.G. yard. Calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 Km/hr.	L4	4	8
			Or			
	b		Design and draw a neat sketch of permanent way cross section and explain the functions of its components.	L4	4	16
15.	a		Explain in detail about Directed Track Maintenance and Measured Shovel Packing.	L4	5	16
			Or			
	b		Discuss in detail about the modern methods of maintenance.	L4	5	16