PRN:		Course Code :	CET 2502

Third Year **B. Tech** End Semester Examination Winter 2023

Highway Engineering

Day and Date: Friday, 01/12/2023 Max Marks: **100**

Time : 10.30 am to 1.30 pm Duration: **03** hrs

		Marks	Bloom's Level	CO
Q.1	**Attempt the following**			
a)	Explain different modes of transportation with advantages and disadvantages.	08	L_3	CO1
b)	Define superelevation with a neat diagram and mention the steps for design of superelevation.	08	L_3	CO1
	OR			
b)	Calculate the SSD on a level road for design speed of 50 kmph for (a) 2way traffic on 2 lane road (b) 2way traffic on single lane road. Assume coefficient of friction as 0.37 and reaction time as 2.5 seconds	08	L_3	CO1
Q.2	**Attempt the following**			
a)	Calculate the stress at interior, edge, and corner regions of a cement concrete pavement using Westergaurds stress equations, use the following data. Wheel load, P = 5100kg E= $3x10^5$ kg/cm^2, Pavement thickness, h = 18cm, Poisson's ratio, μ= 0.15, Modulus of subgrade reaction, K = 6.0 kg/cm^3 Radius of contact area, a = 15cm	08	L_3	CO1
b)	With a neat sketch write the construction procedure for WBM road.	08	L_3	CO2
	OR			
b)	Enlist the test carried out on aggregates and explain any one in detail.	08	L_3	CO2
Q.3	**Attempt any two from the following**			
a)	Explain types of road patterns with advantages and disadvantages.	08	L_2	CO2
b)	Differentiate advantages and disadvantages of flexible and rigid pavements.	08	L_2	CO2
c)	Write a note on DLC b. PQC	08	L_2	CO2
Q.4	**Attempt any two from the following**			
a)	Enlist and illustrate typical flexible pavement failures.	08	L_3	CO3
b)	What is pavement evaluation? Illustrate the methods of pavement evaluation.	08	L_3	CO3

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	c) Enlist and illustrate typical rigid pavement failures.	08	[illegible]	[illegible]
Q.5	**Attempt any Two of the following**			
	a) Enlist various traffic studies. Explain traffic volume studies.	09	L_3	CO3
	b) Enlist various objectives of accident study. Explain the causes of accident	09	L_3	CO3
	c) Explain the applications of O-D study. Explain any one method for collecting O-D data.	09	L_3	CO3
Q.6	**Attempt any Two of the following**			
	a) Explain surface and subsurface drainage system in road pavements.	09	L_2	CO1
	b) Write a note on road construction in waterlogged areas.	09	L_2	CO4
	c) Write short note on a. Level of Service(LOS) b. Passenger Car Unit (PCU)	09	L_2	CO4

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