SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Regular & Supplementary Examinations February-2024
TRANSPORTATION ENGINEERING
(Civil Engineering)

Time: 3 Hours   **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 Write the basic requirements and factors controlling for ideal alignment between two terminal stations. **CO1 L1 12M**

OR

2 A valley curve is formed by a descending gradient of 1 in 40 meeting with an ascending gradient of 1 in 30. Design the length of valley curve for a design speed of 120 kmph so as to fulfill both comfort conditions and head light sight distance requirements. Assume rate of change of change of centrifugal acceleration as 0.6 m/sec^3 , reaction time 1.5 sec and coefficient of friction 0.30. **CO2 L3 12M**

UNIT-II

3 Explain the significance of traffic studies. Briefly explain any four types of traffic studies. **CO3 L2 12M**

OR

4 A fixed time 2-phase signal is to be provided at an intersection having four arms. The design hour traffic and saturation flow are **CO3 L3 12M**

	North	South	East	West
Design Hour flow (pcu/hr)	800	400	750	600
Saturation flow (pcu/hr)	2400	2000	3000	3000

Time lost per phase due to starting delay is 2 sec and All red period is 4 sec. Design two phase traffic signal using Webster's method.

UNIT-III

5 What are the factors should be considered for the design of flexible and rigid pavements. Discuss the significance of each. **CO4 L2 12M**

OR

6 A cement concrete pavement has a thickness of 25 cm and lane width of 2.5 m. Design the tie bars Along the longitudinal joints using the data given below: **CO4 L3 12M**

Allowable working stress in steel tie bars,
S_s = 1050 kg/cm^2

Unit weight of CC, W = 2400 kg/cm^3

Maximum value of friction coefficient, f = 1.2

Allowable tensile stress in deformed tie bar, S_s = 2000 kg/cm^2

Allowable bond stress in deformed bars, S_b = 24.6 kg/cm^2

UNIT-IV

7	a	Discuss briefly about the functions of different components of permanent way.	CO5	L2	6M
	b	Explain the process of adzing of sleepers and its importance in railway track construction.	CO5	L2	6M

OR

8	a	Discuss the theories related to rail creep and their implications for railway track maintenance.	CO5	L2	6M
	b	Discuss the advantages and disadvantages of steel sleepers.	CO5	L2	6M

UNIT-V

9	a	Discuss briefly the purpose for which railway stations are provided.	CO6	L2	6M
	b	Discuss briefly about various components of turnouts.	CO6	L2	6M

OR

10	a	Explain briefly about wayside station on a single and double railway lines.	CO6	L2	6M
	b	Calculate the maximum permissible speed on a curve of high speed for the following data on a M.G track. Degree of curve 0.80, amount of super elevation 6.0 cm, length of transition curve 125 m, maximum speed of the section likely sanction speed = 100 kmph.	CO6	L3	6M

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