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Reg. No: ☐☐☐☐☐☐☐☐☐☐☐☐

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Regular Examinations March-2023
TRANSPORTATION ENGINEERING
(Civil Engineering)

Time: 3 hours   Max. Marks: 60

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

UNIT-I

1	a	Explain any four highway cross-sectional elements.	CO1	L1	6M
	b	Derive an expression for extra widening in a horizontal curve.	CO1	L2	6M

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/sec³, reaction time 1.5 sec and coefficient of friction 0.30.   CO1   L3   12M

UNIT-II

3   The results of a speed study are given in the form of a frequency distribution table. Find the time mean speed and space mean speed.   CO2   L3   12M

No.	Speed range	Average speed (V_i)	Frequency(q_i)
1	2-5	3.5	1
2	6-9	7.5	4
3	10-13	11.5	0
4	14-17	15.5	7

OR

4   a   Explain about the various types of on-street parking patterns possible.   CO2   L1   6M
    b   What are the different types of off-street parking facilities that can be provided in a given area?   CO2   L1   6M

UNIT-III

5   Draw a sketch of flexible pavement cross section and show the component parts. Enumerate the Functions and importance of each component of the pavement.   CO3   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, Ss = 1050 kg/cm²
Unit weight of CC, W = 2400 kg/cm³
Maximum value of friction coefficient, f = 1.2
Allowable tensile stress in deformed tie bar, Ss = 2000 kg/cm²
Allowable bond stress in deformed bars, Sb = 24.6 kg/cm²

UNIT-IV

7	a	Discuss briefly about the functions of different components of permanent way.	CO5	L2	6M
	b	What are the advantages and disadvantages of steel sleepers?	CO5	L1	6M

OR

8	a	Define creep in the rails. Explain various causes of creep.	CO5	L2	6M
	b	What are the requirements of good ballast?	CO5	L1	6M

UNIT-V

9	a	Define grade compensation? If the ruling gradient is 1 in 120 on a particular section of MG and at the same time a 2.6 degree curve is situated on this ruling gradient, find out the allowable ruling gradient.	CO6	L2	6M
	b	Discuss briefly the purpose for which railway stations are provided.	CO6	L2	6M

OR

10	a	Draw a neat sketch of Left hand turnout and show various parts of turnout.	CO6	L2	6M
	b	Explain the classification of gradient in railways.	CO6	L2	6M

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