Q.P. Code: 16CE129 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B. Tech III Year II Semester Regular & Supplementary Examinations October-2020

TRANSPORTATION ENGINEERING-I

(Civil engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	Explain how Jayakar committee recommendations helped highway development in India?	**7M**
	b	Sketch various road patterns commonly in use.	**5M**

OR

2	**a**	What are the salient features of Bombay road development plan?	**6M**
	b	What are the factors affecting highway alignment?	**6M**

UNIT-II

3	**a**	Explain various factors affecting the geometric design	**6M**
	b	What is camber? Why camber is to be provided for a road surface?	**6M**

OR

4	**a**	Derive an expression for SSD for a road section where the design speed is V kmph and the coefficient of longitudinal friction is f.	**6M**
	b	Calculate the minimum sight distance required to avoid a head on collision of two cars approaching from the opposite directions at 100 kmph and 80 kmph on a road section. Assume driver's reaction time of 2.5 seconds, coefficient of friction of 0.7 and brake efficiency of 50% in either case.	**6M**

UNIT-III

5	**a**	Define the following; i) Space-mean speed ii) Time-mean speed iii) Passenger car unit (PCU)	**7M**
	b	What are the objectives of carrying out traffic volume studies?	**5M**

OR

6		Enumerate various causes of road accidents. What engineering measures can help in reducing the road accidents?	**12M**

UNIT-IV

7	**a**	Explain the desirable properties of aggregates to be used in different types of pavement construction.	**6M**
	b	List different tests to be conducted on road aggregates and mention their advantages and limitations.	**6M**

OR

8		What are the different types of bituminous materials used in road construction? Under what Circumstances each of these materials is preferred?	**12M**

UNIT-V

9	**a**	Distinguish between flexible pavements and rigid pavements	**6M**
	b	What factors affect the design of flexible pavements?	**6M**

OR

10		A cement concrete pavement has a thickness of 26 cm and lane width of 3.5 m. Design the tie bars along the longitudinal joints using the data given below: Allowable working stress in steel tie bars, Ss = 1250 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, Ss = 2000 kg/cm^2 Allowable bond stress in deformed bars, Sb = 24.6 kg/cm^2	**12M**

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