

**DARSHAN INSTITUTE OF ENGINEERING AND TECHNOLOGY - RAJKOT**  
**DEPARTMENT OF CIVIL ENGINEERING**  
**B.E. CIVIL -SEM-VII**  
**SUBJECT: Traffic Engineering (2170613)**  
**ASSIGNMENT –YEAR 2019**

**Note : Please do not write answer of bold and italic questions it is repeated**

Chepter-1		<b>Traffic Characteristics</b>	<b>20 % - 14 Marks</b>	
Write any 1 from (7 ) marks and any 4 questions from (3 ) marks = 5				
1	Explain various static vehicle characteristics affecting road design and traffic Performance.		Nov-16	07
2	List out elements involved in traffic operation. Discuss the primary functions of traffic engineering.		Nov-16	07
3	Describe various vehicular characteristics considered in traffic engineering.		Nov-17	03
4	Explain pavement surface characteristics.		Nov-17	03
6	Define traffic engineering. What is scope of traffic engineering?		April-18	03
7	Explain: Road surface characteristics.		April-18	03
8	Explain PIEV theory with neat sketch.		April-18	03
<b>9</b>	<b><i>Explain vehicular characteristics considered in traffic engineering</i></b>		April-18	03
10	How different vehicular characteristics do affects road features?		Nov-18	03
11	Explain (any three) physical factors of road user.		Nov-18	03
Chepter-2		<b>Traffic Studies</b>	<b>30 %- 21 MARKS</b>	
Write any 4 form (3) marks any 3 from (4)marks any 6 from (7)marks question=13				
1	Explain AADT and ADT		Nov-17	03
2	Explain various methods of O and D study.		Nov-17	03
3	Define: Space mean speed, time mean speed, 85 <sup>th</sup> Percentile speed		April-18	03
4	Define: Traffic capacity, basic capacity, practical capacity.		April-18	03
<b>5</b>	<b><i>Draw a fundamental diagram of traffic flow</i></b>		April-18	03
6	Define: operating speed, design speed, space mean speed.		Nov-18	03
7	Explain enoscope method of spot speed study.		Nov-18	03
8	Enumerate with an example about inter section delay count survey		Nov-18	03
9	Explain about classified traffic volume count survey with observation table		Nov-18	04
10	Explain various methods of on-street parking		April-18	04
11	What is PCU? Give factors affecting PCU.		April-18	04
12	Explain the presentation of O-D data with sketch.		April-18	04
13	Discuss presentation of spot speed data with neat sketches.		Nov-17	04
14	Explain various types of parking surveys.		Nov-17	04
15	Enlist method of traffic volume study and explain mechanical counters method with advantages		Nov-16	07
<b>16</b>	<b><i>Describe various types of on-street parking.</i></b>		Nov-16	07
16	Write short note on moving car observer method with its advantages.		Nov-16	07
<b>18</b>	<b><i>Discuss briefly with neat sketch collision diagram and condition diagram.</i></b>		Nov-16	07
19	Explain the term traffic volume. Also discuss different methods of carrying out traffic volume studies.		Nov-17	07
20	Enlist purposes of travel time and delay study. Also explain fixed delay and operational delay.		Nov-17	07
21	Discuss fundamental diagrams of traffic flow.		Nov-17	07
22	Explain spot speed, running speed and journey speed. How spot speed studies carried out?		Nov-17	07
23	What is the need of traffic volume study? Explain methods of traffic volume study.		April-18	07
24	Explain various methods of O-D study.		April-18	07
25	Explain collision and condition diagram. List preventive measure for road accidents.		April-18	07
Chepter-3		<b>Traffic regulation</b>	<b>20 % - 14 Marks</b>	
Write any 1 form (3) marks any 3 from (4)marks any 4 from (7)marks question=8				
1	Define with respect to traffic signal, phase, lost time, red interval.		Nov-18	03

2	Define with respect to traffic signal :cycle, cycle length, interval	Nov-18	03
3	Discuss various types of coordinated signal systems	Nov-17	04
4	Explain various types of traffic signals with advantages and disadvantages	Nov-17	04
5	Explain trial cycle method of signal design	Nov-18	04
6	Explain various types of road marking as per IRC	April-18	04
7	Explain Webster's method of signal design.	Nov-18	04
8	List various traffic signs as per IRC and Draw neat sketch of following signs (i) No parking (ii) Hair pin Band (iii) Give way	Nov-16	07
9	Explain various types of traffic signals with advantages and disadvantages	Nov-16	07
10	Explain various traffic signs as per IRC with neat sketches	Nov-17	07
11	Enlist various types of traffic signals? Explain fixed time signals with its advantages and disadvantages	April-18	07
12	What are the advantages and disadvantages of providing traffic signals	Nov-18	07
13	Draw at least 5 signs of each (not to scale) Regulatory signs, Warning signs and Informatory signs.	Nov-18	07

**Chepter-4** **Street Lighting** 15 %- 10 Marks

**Write Any 2 Form (3) Marks Any 2 From (4)Marks Any 3 From (7)Marks Question=7**

1	Indicate and explain how spacing of street lighting is decided	Nov-17	03
2	<b>Define: Luminous flux, Lumen, Candela.</b>	April-18	03
3	Define: Luminous flux, foot candle, Luminaire	Nov-18	03
4	<b>Indicate and explain how spacing of street lighting is decided</b>	Nov-18	03
5	<b>Explain design factors for street lighting.</b>	April-18	04
6	Discuss distribution of light on the street.	Nov-17	04
7	<b>Explain various design factors for street lighting.</b>	Nov-17	04
8	Explain various design factors responsible for street lighting.	Nov-16	07
9	Indicate and explain how spacing of street lighting is decided.	Nov-16	07
10	Define: Liminous flux, Lumen, Candela, Glare, Luminous intensity, Metrecandle, Illumination.	Nov-16	07
11	Explain various types of light sources used in street lighting.	Nov-16	07
12	What is the importance of highway lighting? State the factors influencing night visibility.	Nov-18	07

**Chepter-5** **Traffic geometrics** 15 %

**Write any 1 form (3) marks any 2 from (4)marks any 5 from (7)marks question=8**

1	Discuss diamond interchange with neat sketch.	Nov-17	03
2	Write a short note on full cloverleaf junction.	Nov-17	03
3	Write short note on 'Diamond Interchange' with sketch.	April-18	04
4	<b>Explain various terminal facilities require along the highways.</b>	April-18	04
5	State advantages and disadvantages of over-pass or flyover	Nov-18	04
6	Prepare a check list of facilities to be provided at any terminal. Justify your answer for each of facility to be provided	Nov-18	04
7	With neat sketches show the movement of traffic on full cloverleaf junction with its advantages.	Nov-16	07
8	Draw neat sketch of Rotary Intersection with its advantages and disadvantages.	Nov-16	07
9	Explain briefly various terminal facilities.	Nov-16	07
10	What is traffic island? Discuss functions, types, advantages and disadvantages if it.	Nov-17	07
11	<b>Explain Rotary Intersection with its advantages and disadvantages.</b>	Nov-17	07
12	Enlist different types of interchanges and explain cloverleaf interchange.	April-18	07
13	What is Traffic island? Describe it functions, advantages and disadvantages.	April-18	07
14	Draw a neat sketch of rotary intersection, show all design components and explain about them in brief	Nov-18	07
15	Draw a neat sketch of (i) Partial clover leaf intersection (ii) Full clover leaf intersection. (iii) Diamond interchange.	Nov-18	07

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*Problem asked as per group no, Group will be declared soon, as per no of students registered in Traffic Engg.*

Ch.1	Traffic Characteristics	Group No.					
1	A vehicle is accelerating on an upward gradient of 1.5% with a rate of $0.8 \text{ m/sec}^2$ , from initial speed of 15 to 25 km/h. Calculate various resistances encountered by the vehicle using following data:	1	2	3	4	5	6
	1.Mass of vehicle : in kg.	1500	1550	1600	1700	1750	1800
	2.Co efficient for rolling resistance :	0.02	0.02	0.02	0.02	0.02	0.02
	3.Frontal area of vehicle: in $\text{m}^2$	3.5	3.6	3.7	3.8	3.4	3.5
	4.Coefficient for air resistance: in $\text{kg/m}^3$	0.4	0.35	0.35	0.36	0.37	0.38
Ch.2	Traffic Studies	Group No.					
1	Using the spot speed data given in the following table, Determine (a) Modal Speed (b) Median Speed (c) Speed limit for Traffic Regulations (d)Speed to be used in geometric design.	1	2	3	4	5	6
	Speed Range(Km/ph)	No. of Vehicles observed					
	21-25	2	3	4	5	2	3
	26-30	6	7	8	6	7	4
	31-35	18	17	15	14	19	21
	36-40	25	24	23	25	21	26
	41-45	19	20	21	20	22	18
	46-50	16	15	14	15	18	18
	51-55	17	18	19	16	17	19
	56-60	12	11	10	13	10	11
	61-65	7	6	7	4	8	4
	66-70	4	5	4	5	4	2
	71-75	3	2	2	4	1	3
76-80	1	2	3	3	1	1	
2	One kilometer section of road is covered by three vehicles in <u>A</u> minute, <u>B</u> minute and <u>C</u> minutes. Calculate time mean speed and space mean speed.	Group-1	Group-2	Group-3	Group-4	Group-5	Group-6
	A	1	4	1	4	6	1
	B	2	5	3	3	5	3
	C	3	6	4	1	3	2

3	The length of a road stretch used for moving observer test is <b>A</b> ____ km and the speed with which the test vehicle moved is <b>B</b> ____ km/hr. Number of vehicles encountered in the stream while the test vehicle was moving against the traffic stream is <b>C</b> _____. Number of vehicles that had overtaken the test vehicle is <b>D</b> _____ and the number of vehicles over taken by the test vehicle is <b>E</b> _____. Find the flow, density and average speed of the stream.							
	Data	Group-1	Group-2	Group-3	Group-4	Group-5	Group-6	
	A	0.5	0.7	0.8	0.6	0.5	0.7	
	B	20	21	20	20	21	22	
	C	107	108	105	105	106	109	
	D	10	11	9	11	12	11	
	E	74	75	71	75	74	73	
4	Calculate Time mean speed and Space mean speed from the following spot speed observations and verify the relation between the two. spot speed data as under- group wise							
	Group-1	50,40,60,60,54,45,31,72,58,43,52,46,56,43,65,33,69,34,51,47,41,62,43,55,40,49						
	Group-2	51,40,60,60,54,45,31,72,58,43,52,46,56,43,65,33,69,34,51,47,41,62,43,55,40,49						
	Group-3	55,40,60,60,54,45,32,72,58,43,52,46,58,43,65,33,69,34,51,47,41,62,43,55,40,49						
	Group-4	57,40,60,60,54,45,31,72,58,43,52,46,56,43,65,34,69,34,51,47,41,62,43,55,40,49						
	Group-5	59,40,60,60,54,45,31,72,58,43,52,46,56,43,65,33,69,34,51,47,41,62,43,55,40,49						
	Group-6	50,47,60,55,45,31,72,58,43,52,46,56,43,65,33,69,34,51,47,41,62,43,55,40,49						
5	Find Time mean speed and space mean speed from following data.		Group-1	Group-2	Group-3	Group-4	Group-5	Group-6
	Speed rang (Kmph)		Frequency					
	0--10		8	9	7	7	6	5
	10--20		18	17	18	19	18	15
	20--30		26	25	25	24	25	26
	30--40		30	29	29	31	33	31
40--50		18	19	20	28	29	22	
6	Calculate Time mean speed and Space mean speed from the following spot speed observations in km/hr.		Spot Speed					
	Group-1		50,40,60,60,54,45,31,72,58,43,52,46,56,43,65,33					
	Group-2		51,40,65,54,45,31,79,58,43,52,46,56,43,65,33					
	Group-3		65,40,60,60,54,45,31,72,59,43,52,46,56,43,65,33					
	Group-4		59,40,60,60,54,49,31,72,58,43,52,46,56,43,65,33					
	Group-5		54,40,60,60,54,45,37,72,58,43,52,46,56,49,65,33					
Group-6		54,40,60,60,54,49,31,72,58,43,52,46,51,43,65,33						
7	The vehicle passes 1 km length of road in <b>A</b> ____ min., <b>B</b> ____ min. and <b>C</b> ____ min. time respectively. Calculate the time mean speed and space mean speed.		G-1	G-2	G-3	G-4	G-5	G-6
	A		1	3	2	2	3	4
	B		2	2	1	1	2	3
	C		3	1	4	4	5	6

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**SKECHES -YEAR 2019**

**Draw sketch in sketch book or blank page**

Chepter-1		<b>Traffic Characteristics</b>
1	Reaction Time and PIEV process	
Chepter-2		<b>Traffic Studies</b>
1	Traffic Flow at Intersection	
2	Desire Lines Map	
3	Parking Accumulation Diagram	
4	Layout and Dimension for On-street Parking Stalls	
5	Collision Diagram	
6	Condition Diagram	
Chepter-3		<b>Traffic Regulation</b>
1	Regulatory or Mandatory Sign (At least twenty)	
2	Regulatory Sign Vertical Post	
3	Warning Signs/Cautionary Signs (At least twenty)	
4	Informatory Signs- a)Road Junction Approach b)End of Speed Limit c)Parking Sign	
5	Route Marker Sign for National highway	
6	Centre Line and Lane Marking a) Centre line marking for two-lane rural highway b) Centre line marking for two-lane urban road c) Longitudinal traffic markings for four/six lane undivided rural highway d) Longitudinal traffic markings for four/six lane undivided rural highway f) Longitudinal traffic markings for six lane divided urban highway	
7	No over taking zone marking	
8	Carriageway transition marking showing reduction	
9	Location of pedestrian crossing	
10	Indian practice for pedestrian marking	
11	Kerb markings	
12	Markings for median strip and approach to an obstruction on a four lane road	
13	Stop lines	
14	Traffic signal	
15	Phasing of traffic Signals a)Two-phase system b) Three-phase system	



