Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code:3160608 Date:04-06-2025

Subject Name:Urban Transportation Planning

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Enlist and explain the objectives of Transportation planning.	**03**
	(b)	What are the role of transportation in society? Discuss economic and social role of transportation.	**04**
	(c)	Explain different levels of of urban transportation planning stage with sketch.	**07**
Q.2	**(a)**	Advantage and Disadvantage of mass transit system.	**03**
	(b)	Explain mass transit system and mass rapid transit system. Also explain capacity of rapid transit system.	**04**
	(c)	What are the factor responsible for travel demand? Explain them in detail.	**07**
		OR	
	(c)	Briefly explain urban mass rapid transit system with their advantages and disadvantages.	**07**
Q.3	**(a)**	Explain the terms: Screen line checks and Cordon line checks.	**03**
	(b)	Define the following: (i.) Study area (ii.) Cordon Line (iii.) Screen Line (iv.) Trip Generation.	**04**
	(c)	What are different surveys in transportation planning? Explain road side interview surveys in detail.	**07**
		OR	
Q.3	**(a)**	Compare Trip end model and Trip interchange model.	**03**
	(b)	Explain gravity model.	**04**
	(c)	Enlist and explain objectives of Origin and Destination Survey. Describe any one method for conducting O-D survey.	**07**
Q.4	**(a)**	Define the following: (i.) CBD (ii.) Interzonal Trip (iii.) Intrazonal Trip	**03**
	(b)	What is TRC trip assignment model.	**04**
	(c)	What is trip generation? Explain in detail the factor governing trip generation and attraction rate.	**07**
		OR	
Q.4	**(a)**	What is a mega city? Explain in brief	**03**
	(b)	Define: 1) Urban form 2) Urban structure.	**04**
	(c)	What is corridor? Explain by drawing sketch typical corridor components.	**07**

Q.5 **(a)** List out the basic road patten in urban area with help of neat sketch. Explain anyone pattern. **03**

(b) Give classification on urban road and explain in detail. **04**

(c) The following data shows average household size and total trips made per day for a particular zone of study area. Develop the trip Production question and check its validity.

Average Household Size	Total Trips Made Per Day
2	4
3	6
4	7
5	8
6	10

07

OR

Q.5 **(a)** Explain Monorail. Give its advantage and Disadvantage of it. **03**

(b) What is land use? Explain in brief. **04**

(c) Find the maximum capacity per hour of BRT and metro for the frequency of 60 trips per hour on any corridor. **07**

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Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3160608 Date:30-05-2024

Subject Name: Urban Transportation Planning

Time: 10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	State the goals and objectives of transportation planning.	**03**
	(b)	State the causes and impacts of urbanization.	**04**
	(c)	Explain the functions of transportation in detail	**07**
Q.2	**(a)**	Define: (1) Desire line (2) CBD (3) Centroid	**03**
	(b)	Classify mass transit system in brief.	**04**
	(c)	Discuss the stages involved in transportation planning	**07**
		OR	
	(c)	Briefly discuss about various factors affecting trip production and trip attraction. What are the merits and limitations of 'Category Analysis'.	**07**
Q.3	**(a)**	Write a short note on screen line check.	**03**
	(b)	State the importance of zoning.	**04**
	(c)	Define land use. Explain land use and transport interaction.	**07**
		OR	
Q.3	**(a)**	Explain intermediate public transport in brief.	**03**
	(b)	Explain the following terminology with the neat diagram (1) Parking accumulation (2) parking volume (3) parking load (4) parking turn over	**04**
	(c)	The following data of trips per day was collected for a city area for various family income groups. Develop the linear regression model for the trips generated for this data. Also, find out the number of trips generated if income reaches to Rs. 81000/-	**07**

Income in ('ooo)	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70
Trips	5	6	7	9	12	15	19	23

Q.4	**(a)**	Give detailed classification of "trip" based on various aspects.	**03**
	(b)	Explain gravity model for trip distribution.	**04**

(c) A study area has been divided in three zones 1, 2, 3. The present trip distribution matrix is given with future total trip productions and trip attractions. Develop the future trip distribution matrix using Detroit method. Do iteration process up to 1 stage. **07**

D / O	1	2	3	Total Present Production	Total Future Production
1	220	250	180	650	950
2	240	200	160	600	800
3	210	160	280	650	950
Total present Attraction	670	610	620	1900	-
Total future Attraction	1000	750	950	-	2700

OR

Q.4 **(a)** Explain the factors affecting modal split **03**

(b) Write a short note on "All or Nothing" method of traffic assignment. **04**

(c) Classify and explain various types of urban road pattern. **07**

Q.5 **(a)** State the principles of route planning. **03**

(b) Compare Trip-end-type model with Trip-interchange-type model for modal split analysis **04**

(c) Compare BRTS and Metro rail by considering different aspects **07**

OR

Q.5 **(a)** Differentiate between captive rider and choice rider. **03**

(b) Define route assignment. State the purposes of route assignment. **04**

(c) State the problems in urban goods movement. Explain factors affecting urban goods movement. **07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023

Subject Code:3160608 Date:20-07-2023

Subject Name:Urban Transportation Planning

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	What are the objectives of urban transportation planning.	**03**
	(b)	Define (1) Urban area (2) mobility (3) Accessibility	**04**
	(c)	Explain various urban class groups.	**07**
Q.2	**(a)**	State the requirements of good urban mass transportation system.	**03**
	(b)	Explain Para transit mode of transportation.	**04**
	(c)	Explain sequential decision making process in travel demand analysis with neat sketch.	**07**
		OR	
	(c)	Compare various mass transit system based on technical parameters.	**07**
Q.3	**(a)**	Define (1) Inter zonal trip (2) Intrazonal trip (3) Through trip.	**03**
	(b)	To determine the spot speed at the given location of a national highway, it is desired to obtain the average error in speed within 3 kmph with confidence level of 95%. Take standard deviation as 9 kmph, Determine the required sample size.	**04**
	(c)	Explain Gerin Lowry land use model.	**07**
		OR	
Q.3	**(a)**	What are the various types of checks for transport surveys? Explain in brief screen line check.	**03**
	(b)	Write a short note on Zoning.	**04**
	(c)	Enlist various transportation surveys. Explain Home interview survey in detail.	**07**
Q.4	**(a)**	State advantages of category analysis.	**03**
	(b)	Describe the factors affecting trip generation.	**04**
	(c)	A self contained city having four residential area A, B, C and D & two industrial estates X and Y. The trip generation equation shows that trips from home to work from each residential area are given below during 24 hours per day. There are 3800 jobs in X zone and 4600 jobs in Y zone. It is also known that attraction between zones is inversely proportional to square of journey times between zones. The journey time is mentioned below. Calculate the inter–zonal trips for home to work by gravity model.	**07**

Journey time

Zones	X	Y
A	14	19
B	16	11
C	9	11
D	14	21

Trip produced from zone

Zones	Trips
A	1000
B	2200
C	1800
D	3200

OR

Q.4 **(a)** What is route assignment. State major aims of traffic assignment **03**

(b) Obtain the future O – D matrix from the given data Detroit Method.(only 1 iteration) **04**

O \ D	1	2	3	4	Ti
1	0	100	150	240	1000
2	100	0	200	350	1500
3	150	200	0	250	900
4	240	350	250	0	950
Tj	1000	1500	900	950	

(c) Develop the trip generation equation using linearregression for the following data. What would be the coefficient ofdetermination? Also, find out the number of trips generated if number of workers in HH are 7. **07**

No. of workers in HH	1	2	3	4	2	5	6	3	4	1
Trips per day	3	5	6	7	4	10	12	7	9	2

Q.5 **(a)** State the properties to good schedule. **03**

(b) Explain in brief the factors affecting modal split. **04**

(c) Describe corridor components with neat sketch. **07**

OR

Q.5 **(a)** Describe the components of urban goods movement **03**

(b) What are the factors affecting urban goods movement? **04**

(c) Explain various transit system performance parameters. **07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2022

Subject Code:3160608 Date:16/06/2022

Subject Name:Urban Transportation Planning

Time:10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define – Urban area, Mobility, Accessibility	**03**
	(b)	Classify urban class group	**04**
	(c)	Explain problem in urban transportation in the present scenario of high vehicle ownership	**07**
Q.2	**(a)**	Enlist various types of Para-transit system. Explain any one in brief.	**03**
	(b)	Explain advantages and disadvantages of BRTS.	**04**
	(c)	Compare different mass transit system	**07**
		OR	
	(c)	What are the requirements of good urban mass transportation system?	**07**
Q.3	**(a)**	Define – Cordon line, Screen line, Inter zonal trips	**03**
	(b)	Compare the revealed preference survey with stated preference survey.	**04**
	(c)	Discuss about Logit models for mode choice.	**07**
		OR	
Q.3	**(a)**	Define – Through trip, Zone, CBD	**03**
	(b)	Explain – Home interview survey	**04**
	(c)	Describe various types of checks in transportation surveys.	**07**
Q.4	**(a)**	What are the limitations of growth factor methods for trip distribution?	**03**
	(b)	Explain factors affecting modal split	**04**

(c) The design year total person trips distributed between four zones are shon in the table below. The modal split analysis shows 70/30 for public transport – vs – private car, as an overall split. The peak period car occupancy is 1.7 persons per car and 51 persons per bus. Develop the trip matrices for the two modes and total vehicular trips. **07**

D O	A	B	C	D
A	--	1500	700	2500
B	580	--	800	550
C	1200	1400	--	1900
D	2300	450	450	--

OR

Q.4 **(a)** What are the factors affecting trip generation and attraction rates? **03**

(b) Write a short note on – Gravity model **04**

(c) Develop trip generation equation using regression analysis for the following data **07**

No. of workers in household	Trips per day
2	4
4	12
3	8
4	10
3	9
5	13
3	8
2	3
3	7
5	12

Q.5 **(a)** Explain urban forms and structures. **03**

(b) What are the components of urban goods traffic? **04**

(c) Describe briefly corridor identification. **07**

OR

Q.5 **(a)** What do you understand by transit scheduling? **03**

(b) What are the factors affecting urban goods movement? **04**

(c) How will you identify potential corridor in urban road transit system? **07**

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