Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021

Subject Code:3160608 Date:08/12/2021

Subject Name:Urban Transportation Planning

Time:02:30 PM TO 05:00 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.**

Q.1 **(a)** Define the following: **03**
i. Mobility ii. Accessibility iii. Urban area

(b) Discuss various urban class groups. **04**

(c) Explain different levels of urban transportation planning stages with sketches. **07**

Q.2 **(a)** Define: **03**
i. Urban form ii. Urban Structure iii. Para-transit

(b) Explain different types of urban structures with the help of sketches. **04**

(c) Explain the basic approaches for developing models for estimation of trip generation with the help sketch. **07**

OR

(c) Classify urban mass transit system based on transit technology. Explain Bus rapid transit system in detail. **07**

Q.3 **(a)** Define with formulas: **03**
i. Time headway ii. Vehicle capacity iii. Passenger capacity

(b) Write the advantages and disadvantages of Mass transit system. **04**

(c) The following data is collected for a town : **07**

Zone	1	2	3	4	5	6
Population (In Thousands)	27	21	31	26	19	20
Total Trips (in Hundreds)	17	14	20	15	14	16

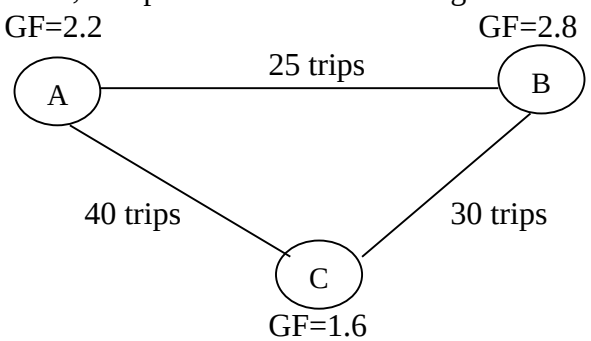
Develop a linear regression model for trips generated from a zone. If the population in a particular zone increases to 92500, predict the expected trip generation from that zone.

OR

Q.3 **(a)** Write a short note on Sampling. **03**

(b) Enlist the various methods for conducting origin and destination surveys. Explain Home interview method. **04**

(c) The three zones A, B, and C are shown in the figure with trip interchanges. Using Fratar method, compute the zonal interchanges for the forecast year. **07**



Q.4 **(a)** Write short note on Trip generation. **03**

(b) Differentiate between trip end models and trip interchange models. **04**

(c) The distribution of present trips among zones A, B and C are given in O-D matrix. The future trips generated T_i is also given. Distribute the future trips among the zones using uniform growth factor, average growth factor and Detroit method. **07**

O \ D	A	B	C	Future trips Generated (T_i)
A	60	100	200	540
B	100	20	300	1260
C	200	300	20	2600

OR

Q.4 **(a)** What is route assignment? Write the factors affecting route assignment. **03**

(b) Describe gravity model. **04**

(c) A town consists of four residential areas 1,2,3, and 4 and two employment producing nodes A & B. Trip generation equation shows that for design year in equation trips from residence to work are as follows: **07**

Zones	1	2	3	4
Trips Produced	1200	2400	1700	3100

There are 4000 jobs in node A and 4400 jobs in node B. It is known that attraction between zones is inversely proportional to square of journey time between zones. The journey time is given as follows in minutes:

Zones	A	B
1	25	20
2	24	13
3	11	15
4	17	21

Calculate and tabulate inter zonal trips using gravity model from home to work.

Q.5 **(a)** Write a short note on route classification. **03**

(b) What is modal split? Discuss the factors affecting modal split. **04**

(c) Enlist different trip distribution models. Explain growth factor models. **07**

OR

Q.5 **(a)** Define corridor. Explain its components with sketch. **03**

(b) Show the basic road patterns in the urban area with the help of sketches. **04**

(c) Explain corridor identification and corridor screen line analysis. **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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