Seat No.:	Enrolment No
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GUJARAT TECHNOLOGICAL UNIVERSITY

Subject Code: 2711301

ME - SEMESTER-I(New course) • EXAMINATION - WINTER- 2015

Date: 02/01/2016

Subject Name: Urban Transportation System Planning Time: 2:30 pm to 5:00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** Explain with neat sketches different patterns of Urban structure. Also discuss how 07 those varieties in patterns influence urban network structure. **07** What are the objectives of transportation planning? Discuss with flow chart various steps involved in 4 stage- transportation planning process. 0.2 Explain the purpose and uses of O-D survey data. How O-D data are presented? 07 Explain Home-interview method in detail. (b) Discuss the significance of Co-ordination in transportation. Also discuss the factors **07** affecting co-ordination. OR State the significance of land use planning in transportation planning process. **07** Discuss with a neat flow diagram 'Lowry's Land Use Model'. Q.3 A four zone city has two residential zones, A and B generating 825 and 375 trips 07 respectively. These trips go to two employment zones C and D attracting 775 and 425 trips, respectively. The travel time in minutes, between zones is AC = 8, BC =10, BD = 13 and AD = 15. Friction factors corresponding to these travel times are 90, 60, 50 and 10 respectively. The socioeconomic factor kij = 1. What is the distribution of trips? What are the limitations of Growth factor methods of Trip distribution? Explain 07 Intervening opportunity model briefly. OR **Q.3 07** (a) What are the factors affecting trip production and attraction? Write an explanatory note on category analysis technique for trip generation forecasting. The following data of trips per day was collected for a city area for various family **07** 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. 78000/-30-35 35-40 40-45 **Income** 45-50 50-55 55-60 60-65 65-70 in '000 Rs. 5 7 9 **Trips** 6 12 15 19 23 (a) What is Modal split? Discuss factors affecting the mode choice. 07 0.4

Utility Function	Cost(C) in Rs.	Time (T) in
		min
$U_{(A)}= 3.2-0.4C-0.05T$	12	35
$U_{(B)} = -0.3 \text{ C} - 0.05 \text{T}$	5.5	50
$U_{(R)}$ = 1.5-0.4C- 0.06T	6	39

As per estimation 21000 workers will move each morning to work then how many workers will choose to take a particular mode of transport?

- (a) What are the factors affecting user's route choice behaviour? Explain All or nothing **07 Q.4** method of route assignment.
 - There are two routes, whose characteristics are given in the following table. The total 07 trips between two zones are 1200 trips per hour. Assign the traffic volumes on the routes by TRC method.

	Route number	Number of lanes	Speed limit (mph)	Length (miles)	Critical volume Vph/lane	Critical travel time (min/mile)	Ideal travel with no volume (min/mile)
	1	One	30	3	600	3	2.5
Ī	2	One	50	4	1100	2	1.5

- Q.5 Write characteristics and advantages of BRTS, Metro and Mono rails.
- **07** (b) Define the Terms: Urbanization, Migration, Growth, Ubiquity, Accessibility, **07** Urban form, Connectivity.

OR

- Q.5 (a) Write short note on Transportation impact study.
- **07** (b) What is the demand responsive transit system? State its advantages and disadvantages. **07**
