Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Subject code: 711301N **Date: 13-06-2014**

Subject Name: Urban Transportation System Planning

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Support your answers with suitable examples, sketches.**
4. **Figures to the right indicate full marks.**

Q.1 **(a)** Explain the stages of Transportation Planning. **04**

(b) Explain the factors influencing Trip Generation Process. **06**

(c) Give Classification of Urban roads and discuss about its accessibility and mobility. **04**

Q.2 **(a)** Prepare a Questionnaire for Home interview survey? Explain its importance in context to Transportation Planning. **07**

(b) Develop regression model for trip generation from the following data: **07**

Household income (Rs. In thousands)	Trips per day
7000	4
8000	7
10000	8
11000	9
15000	11

OR

(b) What is category analysis? How is it useful in trip generation analysis? Explain giving suitable example. **07**

Q.3 **(a)** Explain the procedure for calibrating Gravity Model? **07**

(b) Given that a zone has 275 household with car and 275 household without car and the average trip generation rates for each groups is respectively 5.0 and 2.5 trips per day. Assuming that in the future, all household will have a car, find the growth factor and future trips from that zone, assuming that the population and income remains constant. **07**

OR

Q.3 **(a)** Distinguish between Trip End model & Trip Interchange model. **07**

(b) Explain system Optimum assignment, incremental assignment, capacity restrained assignment, user equilibrium and Dynamic Assignment in context to route choice analysis. **07**

Q.4 **(a)** Let the number of trips from zone i to zone j is 5000, and two modes are available which has the characteristics given in Table below. Compute the trips made by mode bus, and the fare that is collected from the mode bus. If the fare of the bus is reduced to 6, then find the fare collected. **07**

Trip characteristic

	tu_{ij} Travel time	tw_{ij} Waiting time	tt_{ij} approaching time	f_{ij} Travel fare	o_j
Car	20	-	18	9	-
Bus	30	5	3	4	-
a_i	0.03	0.04	0.06	0.1	0.1

(b) The base year trip matrix for a study area consisting of three zones is given below. **07**

O\D	1	2	3	oi
11	20	30	28	78
2	36	32	24	92
3	22	34	26	82
dj	88	96	78	252

The productions from the zone 1, 2 and 3 for the horizon year are expected to grow to 98, 106, and 122 respectively.

The attractions from these zones are expected to increase to 102, 118, and 106 respectively. Compute the trip matrix for the horizon year using doubly constrained growth factor model using Furness method.

Q.5 **(a)** Define the terms: Accessibility, mobility, Ubiquity, land use, spatial interaction, ambience **07**

(b) Write short note on Lowry land use model. **07**

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