Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– I (OLD course)• EXAMINATION – SUMMER 2015

Subject Code: 711301 **Date: 11/05/2015**

Subject Name: Urban Transportation System Planning

Time: 10:30 am to 1:00 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 **(a)** Define the Terms: Urbanization, Migration, Growth, Ubiquity, Accessibility, Urban form, Connectivity. **07**

(b) Explain with neat sketches different patterns of Urban structure. Also discuss how those varieties in patterns influence urban network structure? **07**

Q.2 **(a)** Write an explanatory note on category analysis technique for trip generation forecasting. **07**

(b) Explain four stage transportation Planning Process. **07**

OR

(b) Explain the significance of Home interview survey in Transportation Planning? **07**

Q.3 (a) Explain the concept of saturation utility & its contribution towards urban transportation network Planning? 07

(b) Explain regression analysis technique for trip generation forecasting? **07**

OR

Q.3 (a) Define Trip. Give classification of trips. Discuss the factors influencing the trip generation process? 07

(b) The following trip generation model is calibrated for zonal attraction **07**

A = 3.47EMP + 59.24RFS+ 235.42, where EMP= zone employment, RFS = Retail floor space in zone. Determine how many trips will be attracted to zone 1,2,3,4.

Zone	Employment	Retail floor space
1	3400	210
2	5600	75
3	3900	35
4	2200	80

Q.4 **(a)** What is mode choice analysis? Discuss mode choice models. **07**

(b) Write a note on gravity model for trip distribution analysis. **07**

OR

Q.4 **(a)** Using gravity model with an impedance term of the form C^{-U}, estimate the number of trips from zone1 to all other zones, Ŭ= 1.90 **07**

Zone	Travel time to zone 1 in minute	Productions	Attractions
1		20,000	10,000
2	10	15,000	30,000
3	20	30,000	18,000
4	15	25,000	10,000
5	30	18,000	40,000

Distribute trip productions from zone 1.

(b) What are land use transportation models? Discuss Garin Lowry model and its contribution in analysis of transportation demand. **07**

Q.5 **(a)** Discuss capacity restraint method of route assignment. **07**

(b) Explain the Procedure of Preparing Desire line diagram and Origin destination matrix. **07**

OR

Q.5 **(a)** Explain the importance of screen line and cordon count survey in transportation planning Process. **07**

(b) A Market segment consists of 500 individuals. A multinomial logit model for mode choice is calibrated, resulting to following utility function **07**

U = $б_m$ - 0.30C ï 0.02T, where C = Cost in dollars, T = Travel time in minutes, Value of $б_m$ are for Bus transit = 0.00, Rail transit = 0.40 & Auto = 2.00

For a particular OD Pair, the cost of auto trip, which takes 15 minutes, is 2.50 dollar. Rail trip, which take 20 minutes cost 1.5 dollars & bus transit takes 30 minutes cost 1.00 dollar. Predict the number of trips by each mode from this market segment.