Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 711301N **Date: 23-12-2013**

Subject Name: Urban Transportation System Planning

Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full mark.**

Q.1 (a) Explain by drawing sketch ‘ urban spatial structure’ **07**

(b) Explain location theory for land use transport , also draw graph and describe **07**

Q.2 (a) Explain Lowry model for urban land use transport draw flow diagram **07**

(b) Describe category analysis method for trip generation analysis **07**

OR

(b) What is Modal split? Describe in detail any one method of modal split. **07**

Q.3 (a) The residential zones with (1,2,&3) with population 400,500,&700 resident workers. And four employment zones with 350,450, 500 and300 jobs are connected by highway network having following travel costs t_{14} =10,t_{15}=12 t_{16} =14,t_{17}=15,t_{24}=8 t_{25}=9,t_{26}=10,t_{27}=12,t_{34}=4,t_{35}=6,t_{36}=8,t_{37}=15 assume b=1.4 find actual and zonal accessibility of residential zones **07**

(b) Explain in detail density saturation gradient **07**

OR

Q.3 A four zone city has following characteristics **14**

zone	Total existing population	Holding capacity (acres)
1	3000	300
2	2500	280
3	9000	500
4	4500	350

Travel time in minutes

O \ D	1	2	3	4
1	05	10	12	15
2	10	04	09	20
3	12	09	03	14
4	15	20	14	06

Exponent of 2.0 can be assumed based on work done with other similar cities. If the city is likely to grow at 15% overall in 15 years. What would be Likely population located in each zone in horizon year?

Q.4 (a) Explain by drawing sketch(flow diagram) CATS land use estimating procedure. **07**

(b) Give the difference between trip end type Modal split and trip interchange Type Modal split. Also draw flow diagram. **07**

OR

Q.4 (a) What is route assignment? Describe the factors for route choice, give example. **07**

(b) Explain TRC trip assignment model by giving formula. **07**

Q.5 (a) What is the demand responsive transit system? State its advantages and Dis advantages. **07**

(b) Give classification of urban public transport modes according to R/W category **07**

OR

Q.5 **(a)** Give the formula for Gravity model **04**

(b) A self-contained town consists of four residential areas A,B,C&D. There -are two employment zones X and Y. The generation equation shows that for the design year trips from home to work generated by each Residential area per 24 hours day are as follows **10**

A=1010
B=2240
C=1760
D=3190

There are 3700 jobs in zone X and 4500 jobs in zone Y.

It is known that the attraction between zones is inversely proportional to The square of journey times. The journey times(in minutes) between zones and

Residents are as below

	X	Y
A	15	20
B	14	09
C	09	09
D	16	21

Calculate and tabulate interzonal trips

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