

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Regular Examination January / February 2011

**Subject code: 711301N**

**Subject Name: Urban Transportation Systems Planning**

**Date: 31 /01 /2011**

**Time: 02.30 pm – 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.

- Q.1 (a)** Explain ‘Urban system and transportation draw table of ekectic- grid 07  
**(b)** Describe by drawing flow chart Transportation policy making 07

- Q.2 (a)** Give overview of Major Transportation systems 07  
**(b)** A small city has three residential areas R1, R2, and R3 with 1500,2000, and 2500 workers and two employment zones E1 and E2 with 2000 and 4000 job opportunities the inter zonal travel times in minutes are given in following table find actual and relative zonal accessibility of residential areas assume  $b=1$  07

|                |      |      |                |
|----------------|------|------|----------------|
| o \ d          | 1    | 2    | R <sub>0</sub> |
| 1              | 10   | 12   | 1500           |
| 2              | 7    | 9    | 2000           |
| 3              | 6    | 8    | 2500           |
| E <sub>d</sub> | 2000 | 4000 | 6000           |

**OR**

- (b)** Explain Hansen’s accessibility model 07

- Q.3 (a)** Explain density saturation gradient method 07  
**(b)** A small city has 3 zones following characteristics 07

| Zones | Total existing population | Holding capacity (acres) |
|-------|---------------------------|--------------------------|
| 1     | 2000                      | 100                      |
| 2     | 1000                      | 200                      |
| 3     | 3000                      | 300                      |
| Total | 6000                      | 600                      |

Travel time in minutes are given in following table

|           |   |   |   |
|-----------|---|---|---|
| To \ From | 1 | 2 | 3 |
| 1         | 2 | 6 | 8 |
| 2         | 6 | 3 | 5 |
| 3         | 8 | 5 | 4 |

An exponent of 2 can be assumed based on work done with other cities of same size. If the population of this city is expected to rise to 8000 persons in 20 years, how will it affect the accessibility?

population be distribution by zone? Assume that total employment in each zone is proportional to total existing population in that Zone.

**OR**

- Q.3 (a)** Define :- (i) Urban spatial structure (ii) Accessibility **07**  
 (iii) Ubiquity (iv) Urban form  
 (v) Zoning (vi) Trip  
 (vii) Study area

- (b)** State advantages and disadvantages of mass transport system **07**

- Q.4 (a)** Explain the factors governing trip generation and attraction **07**

- (b)** Explain multiple linear regression analysis **07**

**OR**

- Q.4 (a)** What is the travel demand forecasting? Discuss transportation demand and analysis **07**

- (b)** Explain in detail calibrating gravity model **07**

- Q.5 (a)** A concentric city with single market at a centre wants to produce for different crops A,B, C and D whose characteristics are given in rupees **07**

|                              | A   | B   | C  | D    |
|------------------------------|-----|-----|----|------|
| Price at side per unit       | 120 | 100 | 80 | 50   |
| Production cost per unit     | 20  | 25  | 10 | 10   |
| Net price per unit at side   | 100 | 75  | 70 | 40   |
| Transportation cost per unit | 20  | 10  | 07 | 3.33 |

Sketch your results and indicate which crop should be produce at what optimal distance from city centre, and distribution. What implication does his theory have for transportation and city planning in the context of rent housing cost and distance from city centre?

- (b)** Explain in detail uniform growth factor and average growth factor method of trip distribution **07**

**OR**

- Q.5 (a)** What is modal split? describe factors affecting modal split **07**

- (b)** The total trip produce in an attracted to the three zones A,B,C of a survey area in design year a tabulated as **07**

| Zone | Trip produce | Trip attracted |
|------|--------------|----------------|
| A    | 2000         | 3000           |
| B    | 3000         | 4000           |
| C    | 4000         | 2000           |

It is observed that trip between two zone are inverse proportional to 2 power of travel time between zones which is uniformly 18minutes if trip interchange between zones B & C is found 600.calculate trip interchange between zone A& B ,A&C, B&A,C&B

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