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Name..................................

Reg. No...............................

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2009

CE 04 805 (F) – URBAN TRANSPORTATION PLANNING

(2004 Admissions)

Time : Three Hours   Maximum : 100 Marks

Answer **all** *questions.*

1. (a) What are the aspects commonly sought embrace in the urban transportation?

   (b) Briefly explain any *three* surveys involved in transportation planning.

   (c) Briefly explain the objective of the trip generation study.

   (d) Discuss the category analysis in the part of transportation system.

   (e) Briefly explain Trip distribution.

   (f) Discuss the concepts of growth factor models.

   (g) Explain the factors affecting modal split.

   (h) What do you understand by All-or-nothing Assignment? Briefly explain.

   $(8 \times 5 = 40 \text{ marks})$

2. (a) Explain the various stages in Transport Planning.

   Or

   (b) Explain Evolution and travel demand of transport planning process.

3. (a) The average numbers of work and shopping trips per household according to public and private housing types obtained from a survey are shown in table below :

Trip rates	Work Trips		Shopping Trips		School Trips	
Household size	Public Housing	Private Housing	Public Housing	Private Housing	Public Housing	Private Housing
2	1.53	1.82	0.27	0.28	0.32	0.28
4	1.42	1.97	0.53	0.51	0.79	0.68
5	1.81	2.10	0.31	0.31	1.20	1.35

Obtain Regression equation of work trips for the private housing type. Using the Equation obtained, determine the total number of work trips generated from private housing in a zone where the distribution of households is given below :

Turn over

	Number of Households	
Household size	Public Housing	Private Housing
2	40	10
4	150	40
5	225	70

Or

(b)   (i)   Compare aggregated and disaggregated analysis with merits and demerits.

    (ii)   Compare various category analysis for trip generation.

(8 + 7 = 15 marks)

4.   (a)   A self-contained town consists of four residential areas A, B, C and D and two industrial estates X and Y. Generation Equations show that, for the design year in question, the trips from home to work generated by each residential area per 24 hour day are as follows :

        A   1000

        B   2250

        C   1750

        D   3200

There are 3700 jobs in industrial estate X and 4500 in industrial estate Y. It is known that the attraction between zones is inversely proportional to the square of the journey times between zones. The journey times in minutes from home to work are :

Zones	X	Y
A	15	20
B	15	10
C	10	10
D	15	20

Calculate and tabulate the inter zonal trips for journeys from home to work.

Or

(b)   The number of trips produced in and attributed to the three zones 1, 2 and 3 are tabulated below :

Zone	1	2	3	Total
Trips produced	14	3	28	75
Trips attracted	33	28	14	75

The orders of closeness of the zones is including by the following matrix :

C \ D	1	2	3
1	1	2	3
2	2	1	3
3	2	3	1

The Zonal L factors are given below :

Zone	L Factors
1	0.04
2	0.02
3	0.04

Distribute the trips between the zones.

5.   (a) Explain mode, split analysis in the transport process planning and what are the advantages and disadvantages in the model split ?

Or

   (b) A calibrated utility function for the travel time in a medium size city by car, bus and light rail is $u = a - 0.001 X_1 - 0.03 X_2$ where X_1 is the cost of travel (Rs.) and X_2 is the travel time (minutes.) Calculate the model split for the given values :

Mode	A	X_1	X_2
Car	− 0.25	120	20
Bus	− 0.30	65	30
Light Rail	− 0.35	85	35

If parking fee of Rs. 50/- per trip is imposed on cars, what would be the split to the other two modes.

(4 × 15 = 60 marks)