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Name...

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

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION DECEMBER 2008

CE 04 805 (F)—URBAN TRANSPORTATION PLANNING

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all *questions.*

I. a) Explain sequential transportation planning process.
   b) List the assumptions in travel demand estimation process.
   c) Enumerate the factors to be considered while delineating the study area and zones for transportation planning.
   d) Compare various trip generation models.
   e) List the factors that can influence trip distribution.
   f) Write a note on opportunity models.
   g) Compare various mode choice models.
   h) Distinguish between proportional assignment and capacity restrained assignment techniques.

   (8 × 5 = 40 marks)

II. a) i) *Transportation and landuse are interrelated.* Explain with suitable examples. (8)
      ii) What are the typical goals, objectives and constraints in transportation planning? (7)

   (OR)

   b) i) Explain the system concept of transportation planning. (8)
      ii) Discuss the importance of travel demand matrix. (7)

III. a) i) Explain how you will conduct home interview surveys for a typical transportation planning. (8)
       ii) What are the factors that will govern trip productions and attractions? (7)

   (OR)

   b) i) Explain the use of regression models in trip generation modelling. (8)
      ii) Critically compare zonal and household level regression models. (7)

IV. a) Consider the base year trip distribution of the simple four-zone system given in table below. Assuming the growth factors for the four zones are as given below, find the target-year trip distributions using any growth factor method

I/J	1	2	3	4	Growth factor
1	0	20	30	15	2
2	20	0	10	40	2
3	30	10	0	35	3
4	15	40	35	0	1

(OR)

Turn over

b) Apply gravity model for the following data and calculate all trip interchanges
In F = 1.8 ln W. Take all zonal adjustment factors as 1.

Zone	Productions	Attractions
I	2000	1
II	1000	2
III	3500	0
IV	0	5

W_{ij} Matrix				
i/j	I	II	III	IV
I	5	10	15	20
II	10	15	10	10
III	15	10	15	5
IV	20	10	5	5

V.   a) Given the utility function $U_k = a_k - 0.002 X_1 - 0.035 X_2$.
    Where, X_1 is the travel cost in rupees and X_2 is the travel time in minutes. Calculate the market
    share of the following models.

Sl. No.	Mode	a_k	X_1	X_2
1.	Govt. bus	-0.20	25	50
2.	Private bus	-0.25	27	40
3.	Mini bus	-0.35	20	60

Also estimate the effect that 10% increase in the cost and 5% reduction in travel of Govt. Bus
will have on modal split.

(OR)

b) Determine the minimum path-tree from Node 6 to all other nodes for the following case:

Link	Travel Time in minutes
1-2	3
1-3	5
1-4	7
2-4	3
2-5	8
3-4	3
3-5	6
3-6	6
4-5	4
5-6	5

(4 × 15 = 60 marks)