

BRANCH : CIVIL ENGINEERING

SEMESTER : 6th

Assignment-1

CHAPTER-1 URBANIZATION

1. What is Urbanization? Explain by drawing Urbanization cycle.
2. What is urban agglomeration?
3. Write a short note on problem of Urbanization.
4. Explain Urban Class Groups.
5. Explain about basic features & pattern of India's urbanization.
6. Define Urban Area as per Indian Census.
7. Write a short note on problem of urban transport.

Assignment-2

CHAPTER-1 URBANIZATION

1. Explain the following terms with respect to Urban Transport.
 - a) Transport
 - b) Transportation
 - c) Transportation System
 - d) Transportation Engineering
 - e) Mobility
 - f) Accessibility
 - g) Goals of Transport Planning
 - h) Objectives of Transport Planning
2. Explain Levels of Urban Transport Planning with flow chart. (Literature will be provided)
3. Explain economical, political and social role of transportation. (Literature will be provided)
4. Compare different features of conceptual plan, outline plan, master plan, statutory or advisory plan, and detailed development plan.
5. Explain Urban Transportation Planning process by drawing flow chart. (Refer: Pg. No. 486 of Transportation Engineering – An Introduction by C. Jotin Khisty & B. Kent Lall)

Assignment-3

CHAPTER-2 MASS TRANSIT SYSTEMS

1. Define the following terms
 - a) Public Transportation
 - b) Private Transportation
 - c) Para-Transit
2. Explain in brief about various mass transport systems
3. Write comparison between BRT, METRO, Commuter Rail, Monorail, and LRT.
4. What is coordination with respect to transportation engineering? (Literature will be provided)
5. Explain different types of coordination of transport modes. (Literature will be provided)

Assignment-4

CHAPTER-3 LAND USE AND TRANSPORTATION

1. Explain the following terms with sketch
 - i. Land use
 - ii. Study area
 - iii. Cordon line
 - iv. Zone
 - v. Centroid
 - a) Origin
 - b) Destination
 - c) Trip
 - d) Interzonal trip
 - e) Intrazonal trip
 - f) Through trip
 - g) Screen line
2. Explain Land use-Transport cycle with sketch.
3. Which points should be considered while selecting a Land use-Transport model? (Refer: Pg. No. 725 of Traffic Engineering and Transport Planning by Dr. L.R. Kadiyali)
4. Explain Lowry Derivative Model. (Reference as above Pg. No. 726)
5. Explain Garin-Lowry Model. (Reference as above Pg. No. 732)
6. Which factors are considered for selection of external cordon line for an urban transportation study area? (Reference as above Pg. No. 646)
7. Explain the concept of Zoning.
8. Suggest the points to be kept in view when dividing the study area into Zones. (Reference as in Q. 3 Pg. No. 647)
9. Explain the system used for coding of the zones.
10. Enlist and explain the surveys carried out for Origin-Destination Study.

11. Explain Desire Line Diagram. (Reference as in Q. 3 Pg. No. 66)
12. Explain inventory of transportation facilities. (Reference as in Q. 3 Pg. No. 659)
13. Explain expansion of data from samples. (Reference as in Q. 3 Pg. No. 661)
14. Explain various checks for the data collected for transportation planning.



Assignment-5

CHAPTER-4 TRAVEL DEMAND MODELING

1. What is travel demand?
2. Explain travel demand function.
3. Explain by drawing flowchart travel demand modeling.
4. Explain by drawing flow chart sequential travel demand analysis.
5. Define the following terms.
 - a) Trip Generation
 - b) Home-based trips
 - c) Non home-based trips
 - d) Generation end of trip
 - e) Attraction end of trip
6. Explain factors affecting trip generation and trip attraction
7. Explain multiple linear regression analysis and category analysis for trip generation along with their assumptions, advantages and disadvantages.
8. Explain aggregate analysis and disaggregate analysis for trip generation.
9. What is trip distribution?
10. Explain all the growth factor methods for trip distribution. What are the disadvantages of growth factor methods?
11. Explain synthetic methods for trip distribution.
12. What is modal split?
13. Explain factors affecting modal split
14. Compare pre-distribution modal split (trip end modal split) and post-distribution modal split (trip interchange modal split).
15. Explain probit and logit analysis for modal split.
16. Define traffic assignment. State applications of traffic assignment.

17. Write short note on
- a) All-or-nothing assignment (Free assignment or Desire assignment)
 - b) Multiple route assignment
 - c) Capacity restraint assignment
 - d) Diversion Curves



Assignment-6

CHAPTER-4 TRAVEL DEMAND MODELING

1. The following data is collected for a town

Zone	1	2	3	4	5	6	7
Population (In Thousands)	25	20	28	18	19	21	22
Trips Generated (In Hundreds)	18	15	20	13	14	16	17

Develop a linear regression model for trips generated from a zone. If the population in a particular zone increases to 45780, predict the expected trip generation from that zone.

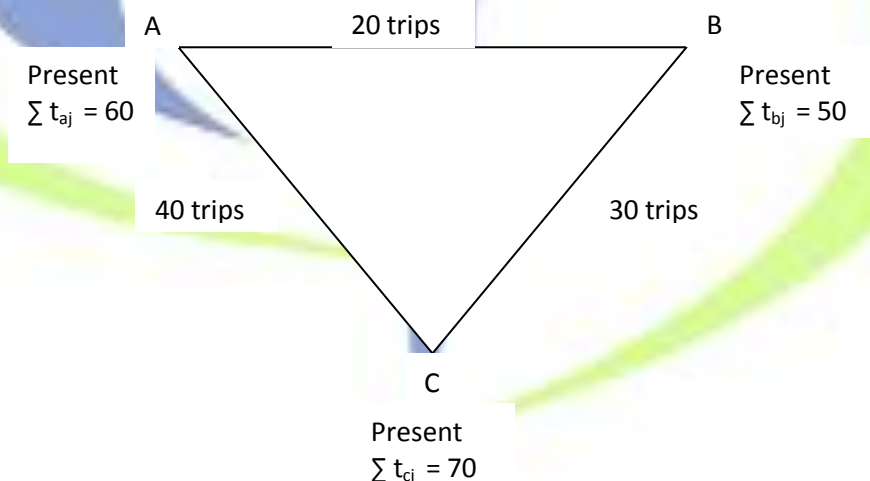
2. Table shows data for vehicle trips/day, as related to income and persons in house hold for one zone of study area. Develop trip generation models and find out the best model.

Trips/Day	Income (In Thousands)	Persons in House hold
2	50	4
4	45	5
3	90	3
4	110	5
6	100	5
5	120	6

3. A study area has been divided into four zones 1, 2, 3 & 4. The present trip distribution matrix is given. Develop the future trip distribution matrix upto two iterations using (a) uniform growth factor method (b) average growth factor method (c) Detroit growth factor method (d) furness growth factor method

O/D	1	2	3	4	Total Present Trips Produced	Total Future Trips Produced
1	-	40	60	55	155	300
2	40	-	35	60	135	350
3	50	60	-	75	185	280
4	45	70	45	-	160	250
Total Present Trips Attracted	135	170	140	190	635	-
Total Future Trips Attracted	300	375	280	225	-	1180

4. Three zones A, B, C are shown with interchanges between A and B = 20, between B and C = 30 and between C and A = 40. These are non-directional interchanges. Growth factors of 2.5, 3 and 1.5 are forecasts for the zones A, B and C respectively. Using fratar growth factor method compute the zonal interchanges in the forecast year.



5. A self contained town consist of four residential areas A, B, C and D; 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 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 interzonal trips for journeys from home to work.

6. The number of trips produced and attracted to three zones A, B and C are shown below:

Zone	A	B	C	Total
Trips Produced	50	80	70	200
Trips Attracted	80	70	50	200

The closeness order of the zones is shown in the following matrix:

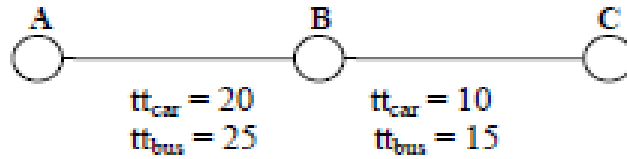
O/D	A	B	C
A	1	2	3
B	2	1	3
C	3	2	1

The zonal factors are given below:

Zone	L Factor
A	0.035
B	0.025
C	0.4

Distribute the trips between the zones

7. Three zone A, b and C are connected by two lanes roads as shown in figure below with travel time by bus shown in bracket and travel time by car.



The probability (P_c) of choosing the car mode is found to be given by

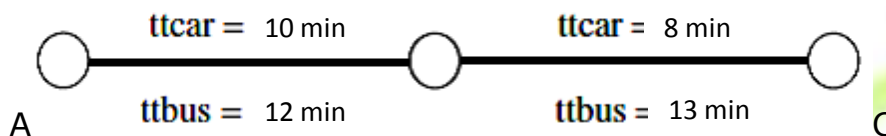
$$P_c = \frac{1}{1 + e^{-u(x)}} \text{ where, } u(x) = 0.86 - 0.08(tt_{car} - tt_{bus}).$$

The total trip exchange between zones are as follows:

From	To	Person trip/Day
A	B	1200
B	A	0
A	C	500
C	A	1800
B	C	400
C	B	500

Determine the two-way volume in car per day on the road AC if the average car occupancy is 2.5

8. The probability of choosing the car mode (P_c) is found to be given $P_c = 1 / (1 + e^{-u(x)})$. Where, $u(X) = 0.70 - 0.04(tt_{car} - tt_{bus})$



The total trip exchanges between zones are as follows. Determine the two way volume in cars per day on the roads AB and BC and if the average car occupancy is 2.6

From	To	Person trip/Day
A	B	1200
B	A	0
A	C	800
C	A	1600
B	C	900
C	B	800

Assignment-7

**CHAPTER-5 MASS TRANSIT DESIGN, TRANSPORT
CORRIDOR & URBAN FORMS AND STRUCTURES**

1. Explain route schedules (time table) for mass transit systems. Also explain procedure for constructing the same. (Literature will be provided)
2. Define the following terms with sketch
 - a) Corridor
 - b) Segment
 - c) Point
 - d) Screen line
 - e) Segment capacity
 - f) Line capacity
 - g) Classification of urban roads
 - h) Classification of rural roads
3. Describe briefly corridor identification and corridor screen line analysis
4. Explain urban form with sketch.
5. Explain types of urban structures with sketch.
6. Explain transportation system management (TSM). (Refer: Pg. No. 631 of Transportation Engineering – An Introduction by C. Jotin Khisty & B. Kent Lall)
7. State differences between TSM and long range planning. (Refer: Pg. No. 635 of Transportation Engineering – An Introduction by C. Jotin Khisty & B. Kent Lall)

Assignment-8

**CHAPTER-5 MASS TRANSIT DESIGN, TRANSPORT
CORRIDOR & URBAN FORMS AND STRUCTURES**

1. Find maximum capacity per hour of BRT and METRO for the frequency of 120 trips per hour
2. On an urban corridor regular bus transit is operated with headway of 15 minutes during peak hour. The reliability of transit arrival at a stop is observed 90%. If the seating capacity of a bus is 60 and load factor 1.5 calculate the vehicle capacity of transit if 50% schedule is operated.

