

Code No: C8702

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012
URBAN TRANSPORTATION PLANNING
(HIGHWAY ENGINEERING)**

Time: 3hours**Max. Marks: 60**

**Answer any five questions
All questions carry equal marks**

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- 1.a) Describe various urban transportation problems and issues. Explain any three challenges and limitations of Transportation System.
- b) Explain with the help of any model or figure about the basic components of transportation systems with their relationships.
- 2.a) What do you understand by overall planning process? Explain long term planning process and short term planning process with examples.
- b) Describe the concept of zoning system, study area, trips generation and the concept OD data collection process with suitable formats.
- 3.a) Explain various survey sampling techniques used in data collection process. How do you refine the data and various checks for the data?
- b) What are the factors influencing the trip generation? Describe the zonal regression technique for trip generation analysis?
- 4.a) Explain various growth factor methods used in trip distribution and write the merits and demerits of each method.
- b) Using Fratar Growth factor, carry out at least two iterations of the given matrix to obtain the future travel demand table.

<i>Zone No.</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Growth Factor</i>
<i>1</i>	-	75	175	80	1.50
<i>2</i>	80	-	325	160	2.75
<i>3</i>	170	380	-	280	4.30
<i>4</i>	220	180	390	-	2.5

- 5.a) Explain the basic philosophy of gravity model. Describe unconstrained, production constrained and fully constrained gravity models with formulas.
- b) Describe the procedure for calibration of Gravity model and also mention the significance of deterrence function in gravity model.
- 6.a) Explain trip end model split model and two stage model split models with suitable formulas and examples?
- b) List out various trip assignment techniques? Describe all or nothing assignment technique with suitable numerical example.

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- 7.a) Explain the concept of logit models for mode choice analysis? Compare between binary mode choice model and multinomial mode choice model with suitable formulas?
- b) Four zones ABCD are connected by two lane roads with travel times by car and bus given in table. The probability of choosing the car mode is found to be given by $P_c = [1 / (1 + e^{-u(x)})]$, where $u(x) = 0.93 - 0.083 (t_{car} - t_{bus})$. The total trip exchanges between zones are as follows: Determine two way volumes in cars per day on the road AB if the average car occupancy is 3.25.

<i>From</i>	<i>To</i>	<i>Person trips per day</i>	<i>Travel time by car</i>	<i>Travel time by bus</i>
A	B	1400	12	18
B	A	0	12	18
A	C	800	27	40
C	A	1600	27	40
B	C	500	15	22
C	B	750	15	22
A	D	620	45	65
D	A	375	45	65
C	D	750	18	25
D	C	230	18	25

8. Write short note on any four of the following
- Traffic Impact studies and facilities
 - Master plan preparation
 - Corridor deficiency analysis
 - Diversion curves
 - Secondary sources of data collection
 - Expansion factors
