## **GUJARAT TECHNOLOGICAL UNIVERSITY** ME – SEMESTER-1 (NEW) EXAMINATION – WINTER 2016

Subject Code: 2711301Date:05Subject Name: Urban Transportation System Planning			
Time: Instruc	<ul> <li>: 2:30 pm to 5:00 pm Tota</li> <li>: Attempt all questions.</li> <li>2. Make suitable assumptions wherever necessary.</li> <li>3. Figures to the right indicate full marks.</li> </ul>	l Marks: 70	
Q 1 a) b)	Explain a flow diagram "Transportation Planning Process" with sketch. State the significance of land use planning in transportation planning process. Discuss with a neat flow diagram 'Lowry's Land Use Model'.		
Q 2 a) b)	What is trip generation? What are the factors affecting it? Discuss briefly. A four-zone study area has two residential zones, A and B, generating 625 and 475 trips respectively. These trips go to Two-employment zones C and D, attracting 775 and 325 trips respectively. The travel time in minutes between zones is $AC = 8$ , $BC = 10$ , $BD = 13$ and $AD=15$ . Friction factor (F <sub>ij</sub> ) corresponding to travel time are 90, 75, 60 and 45 respectively taken for Gravity model. What is distribution of trips? Assume K <sub>ij</sub> = 1. <b>OR</b>		
b)	Explain intervening and competing opportunity model briefly.	07	

- **Q 3 a)** What are the factors affecting individual's choice of the travel mode? Briefly discuss about **07** Logit models for modal split analysis.
  - b) A market segment consists of 500 individuals. A multinomial logit mode 07 choice model is calibrated for this market segment, resulting in the following utility function:  $u = \beta_m 0.30C 0.02T$ . Where, C = out of pocket cost (Rs.), T = travel time (min). Values of  $\beta_m$ , cost and travel time for a particular O-D pair for three modes are as follows:

Mode	B <sub>m</sub>	Cost (Rs.)	Travel time (min)
Bus	0.0	1.00	30
Rail	0.4	1.50	20
Auto	2.0	2.50	15

Predict the number of trips by each mode from this market segment.

## <u>OR</u>

Q 3 a) What is the importance of route assignment in travel demand modeling? What is 'All-or- nothing' assignment? Explain with suitable example. b) The total trip volumes from zone 1 to 2 are 2100. Find the volumes on each 07 route, connecting the two zones using the particulars given in table below by TRC trip assignment.

Route No.	Length (km)	Speed (kmph)
1	2.4	36
2	1.5	24
3	1.2	16
4	2.8	20
5	3.5	40

- Q 4 a) Define the following terms and show them on a sketch of study area. 07 (i) Cordon line, (ii) Zones, (iii) Centroid of zone, (iv) Intra-zonal trip, (v) Inter-zonal trip, (vi) Screen line, (vii) Desire line.
  - b) How will you evaluate the existing mass transportation system? What will you suggest to 07 improve the ridership in the mass transportation system?

## <u>OR</u>

- **Q 4 a)** Explain the sequential and non-sequential approach for travel demand forecasting? 07
  - b) Give classification of urban roads? Discuss about their accessibility & connectivity. 07
- Q 5 a) Write short note on "Urban goods movement".
  b) Discuss about rail based urban rapid transit systems with their types, characteristics, 07 advantages and disadvantages.
- Q 5 a) What is the demand responsive transit system? State its advantages and disadvantages. 07
  - b) What is the importance of co-ordination in transportation? Discuss its factors and types. 07