

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**PDDC - SEMESTER-VIII EXAMINATION – WINTER 2015**

**Subject Code: X80603****Date: 04/12/2015****Subject Name: URBAN TRANSPORTATION SYSTEM (DEPT.ELE.-II)****Time: 2:30pm to 5:00pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) 1. What are the factors affecting travel demand? **04**  
 2. State 3 important problems in urban transportation. **03**  
 (b) Explain various urban class groups. **07**
- Q.2** (a) Write about study area, zoning, sector, coding and basic movements in transportation survey with suitable sketch. **07**  
 (b) Write about sampling size for home interview survey. Also, explain expansion of data from sample data collection for study area. **07**
- OR**
- (b) Discuss about various checks applied on collected data for transportation survey. **07**
- Q.3** (a) Explain concept of screen line survey and cordon line survey of study area for urban transportation plan preparation. **07**  
 (b) What is mass transit system? Write suitability of bus transit and rail transit along with classification of urban mass transit system. **07**
- OR**
- Q.3** (a) Sketch and name basic urban forms and urban structures. **07**  
 (b) Discuss about traffic system management techniques. **07**
- Q.4** (a) Discuss about sequential transportation demand analysis. **07**  
 (b) 1. Find the maximum capacity per hour of BRTS for the frequency of 20 trips per hour on a corridor. Number of seats in a bus is 45 and load factor is 1.3. **03**  
 2. Write short note on route planning for mass transit system. **04**
- OR**
- Q.4** (a) The present trips between the 3 zones A, B and C of a study area is as shown in trip matrix as below: produced trips in future and attracted trips in future is also given in table. **07**

Destination Origin	A	B	C	Future trips
A	-	20	13	50
B	5	-	12	51
C	35	15	-	100
Future trips	100	60	40	

Distribute the trips using Furnace method.

- Q.4** (b) In a mega city along an important roadway there are 5 multiplex. Develop the **07**

trip generation equation from the following data.

Multiplex having number of screen	No. of trips attracted
1	250
2	550
2	600
4	800
5	1000

- Q.5 (a)** What is captive transit rider? **07**  
 Trip distribution for 4 zones is as shown below:

Destination Origin	1	2	3	4
1	-	500	600	400
2	1800	-	1400	350
3	600	650	-	630
4	2200	580	1620	-

The modal split data analysis indicates 20 % trips by private car and 80 % trips by public transportation bus system.

During peak hour car occupancy is 2 and bus occupancy is 60.

Calculate car trip matrix and bus trip matrix.

- (b)** 1. What is static traffic assignment and dynamic traffic assignment? **03**  
 2. Explain in brief intervening opportunity model? **04**

**OR**

- Q.5 (a)** In a town there are 4 residential zones and 2 employment availability zones. **07**  
 The number of trip generation or production from home to job is as tabulated below:

Zone	No of trips
1	1000
2	2245
3	1750
4	3194

Total number of trips attracted at zone A is 4000 and zone B is 4400 from different residential zones.

The journey time in min. from home to job is as tabulated below:

Zone	A	B
1	25	20
2	25	14
3	12	14
4	18	22

Calculate interzonal trips using Gravity model and tabulate result matrix.  
 No need of iterative process.

- (b)** 1. What are the factors affecting modal split? **03**  
 2. What are the factors affecting trip production and trip attraction? **04**

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