

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-6 SEMESTER – OLD PAPER – S22 TO W25 – QUESTION BANK

Subject Name & Code:

URBAN TRANSPORTATION PLANNING- 3160608

Unit 1: Urbanization, Urban Class Groups, Transportation Problems, Urban Transport System Planning Process

Repeated Questions:

1. **Explain problems in urban transportation in the present scenario of high vehicle ownership.** (S25 - Q1c, 07 marks); (S22 - Q1c, 07 marks); (W24 - Q1c, 07 marks)
2. **Explain/Classify various urban class groups.** (S24 - Q1c, 07 marks); (W23 - Q1b, 04 marks); (S22 - Q1b, 04 marks)
3. **Define: Mobility, Accessibility, Urban area.** (S24 - Q1b, 04 marks); (W24 - Q1a, 03 marks); (S22 - Q1a, 03 marks)
4. **State/Discuss the causes and impacts / merits and demerits of urbanization.** (W25 - Q2b, 04 marks); (W24 - Q1b, 04 marks); (W23 - Q1c, 07 marks)
5. **Enlist and explain the objectives of Transportation planning.** (S25 - Q1a, 03 marks); (W23 - Q5 OR a, 03 marks)

Other Important Questions (Newest to Oldest):

1. **Explain the functions of transportation in detail.** (W24 - Q1c, 07 marks)
 2. **Define: Goal, Mobility, Hamlet.** (W23 - Q1a, 03 marks)
 3. **State the goals and objectives of transportation planning.** (W24 - Q1a, 03 marks)
 4. **Explain different levels of urban transportation planning stage with sketch.** (S25 - Q1c, 07 marks)
 5. **Discuss the levels of urban transportation planning with neat sketch.** (S23 - Q1c, 07 marks)
 6. **Draw a flow chart and explain various steps involved in transportation.** (S23 - Q1b, 04 marks)
 7. **Explain various steps involved in transportation planning.** (W25 - Q1c, 07 marks)
 8. **Discuss the stages involved in transportation planning.** (W24 - Q2c, 07 marks)
 9. **What is urbanization? Discuss merits and demerits of urbanization.** (S23 - Q3 OR b, 04 marks)
 10. **State the social functions of transportation.** (W25 - Q1a, 03 marks)
 11. **Differentiate between Goals and Objectives.** (W25 - Q1b, 04 marks)
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Unit 2: Urban Mass Transportation Systems

Repeated Questions:

1. **Explain Para transit mode of transportation / Enlist various types of Para-transit system. Explain any one in brief.** (S24 - Q2b, 04 marks); (S22 - Q2a, 03 marks); (W24 - Q1b, 04 marks)
2. **Explain advantages and disadvantages of BRTS.** (W25 - Q4a, 03 marks); (S24 - Q4 OR a, 03 marks); (S22 - Q2b, 04 marks); (W23 - Q2c, 07 marks)
3. **Compare different mass transit systems / Compare various mass transit system based on technical parameters.** (S22 - Q2c, 07 marks); (S24 - Q2 OR c, 07 marks)
4. **What are the requirements of a good urban mass transportation system?** (S24 - Q2a, 03 marks); (S22 - Q2 OR c, 07 marks)
5. **Briefly explain urban mass rapid transit system with their advantages and disadvantages.** (S25 - Q2 OR c, 07 marks); (S23 - Q3 OR c, 07 marks)
6. **Classify urban mass transit system based on transit technology. Explain Bus rapid transit system in detail.** (W24 - Q2c, 07 marks)
7. **Explain mass transit system and mass rapid transit system. Also explain capacity of rapid transit system.** (S25 - Q2b, 04 marks)
8. **Advantage and Disadvantage of mass transit system.** (S25 - Q2a, 03 marks)

Other Important Questions (Newest to Oldest):

1. **Find the maximum capacity per hour of BRT and metro for the frequency of 60 trips per hour on any corridor.** (S25 - Q5 OR c, 07 marks)
 2. **Explain Monorail. Give its advantage and Disadvantage of it.** (S25 - Q5 OR a, 03 marks)
 3. **Explain LRTS with advantages and disadvantages.** (W25 - Q2 OR c, 07 marks)
 4. **Explain Transportation System Management (TSM) strategies.** (W23 - Q2b, 04 marks)
 5. **Define: Load factor, Urban Structure, Rural area.** (W23 - Q2a, 03 marks)
 6. **Classify mass transit system in brief.** (W24 - Q2b, 04 marks)
 7. **Explain sequential decision making process in travel demand analysis with neat sketch.** (S24 - Q2c, 07 marks); (W24 - Q2 OR e, 07 marks)
 8. **What do you mean by Para-transit? Explain the various types of Para-transit.** (S23 - Q5 OR c, 07 marks)
 9. **Explain intermediate public transportation / transport in brief.** (W25 - Q3 OR a, 03 marks); (W24 - Q3a, 03 marks)
 10. **State the requirements of good urban mass transportation system.** (S24 - Q2a, 03 marks)
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Unit 3: Survey and Data Collection for Urban Landuse and Transportation Planning Models

Repeated Questions:

1. **Explain the terms: Screen line checks and Cordon line checks.** (S25 - Q3a, 03 marks); (S23 - Q3a, 03 marks)
2. **Enlist various transportation surveys. Explain Home interview survey in detail.** (S24 - Q3 OR c, 07 marks); (W24 - Q3c, 07 marks); (W23 - Q3c, 07 marks)
3. **Define: Cordon line, Screen line, Inter zonal trips.** (S22 - Q3a, 03 marks)
4. **Define: Through trip, Zone, CBD.** (S22 - Q3 OR a, 03 marks)
5. **What are the various types of checks for transport surveys? Explain in brief screen line check.** (S24 - Q3a, 03 marks); (W24 - Q3a, 03 marks)
6. **Write a short note on Zoning.** (S24 - Q3 OR b, 04 marks); (W24 - Q3b, 04 marks); (W24 - Q3b, 04 marks)
7. **Define: (1) CBD (2) origin (3) study area.** (W25 - Q3a, 03 marks)
8. **Enlist Various methods of O-D survey. Explain road side interview method.** (W25 - Q3b, 04 marks)
9. **Explain Home interview survey.** (S22 - Q3 OR b, 04 marks)

Other Important Questions (Newest to Oldest):

1. **To determine the spot speed at the given location of a national highway, it is desired to obtain the average error in speed within 3 kmph with confidence level of 95%. Take standard deviation as 9 kmph, Determine the required sample size.** (S24 - Q3b, 04 marks)
2. **Enlist and explain objectives of Origin and Destination Survey. Describe any one method for conducting O- D survey.** (S25 - Q3 OR c, 07 marks)
3. **Define the following: (i.) Study area (ii.) Cordon Line (iii.) Screen Line (iv.) Trip Generation.** (S25 - Q3b, 04 marks)
4. **What are different surveys in transportation planning? Explain road side interview surveys in detail.** (S25 - Q3c, 07 marks)
5. **Compare Trip end model and Trip interchange model.** (S25 - Q3 OR a, 03 marks)
6. **Write a short note on screen line check.** (W24 - Q3a, 03 marks)
7. **Write a short note on Sampling.** (W24 - Q3 OR b, 04 marks)
8. **Compare the revealed preference survey with stated preference survey.** (S22 - Q3b, 04 marks)
9. **Describe various types of checks in transportation surveys.** (S22 - Q3 OR c, 07 marks)
10. **Define: (1) Inter zonal trip (2) Intrazonal trip (3) Through trip.** (S24 - Q3a, 03 marks); (W24 - Q3 OR a, 03 marks)
11. **Define: (1) Intrazonal zonal trip (2) Interzonal trip (3) Through trip.** (W24 - Q3 OR a, 03 marks)
12. **Define: Base year, Screen Line, Desire line.** (W23 - Q4 OR a, 03 marks)
13. **Define: Cordon line, Trip, Land use.** (W23 - Q4a, 03 marks)
14. **Write short note on: Network identification and Coding of the zone.** (W23 - Q3a, 03 marks)
15. **Give the uses of O & D study.** (W23 - Q3 OR a, 03 marks)
16. **Explain various survey data checks.** (W23 - Q3 OR b, 04 marks)
17. **Explain in brief - License plate survey method.** (W23 - Q3 OR c, 07 marks)
18. **What are the applications of O-D survey data? Enlist different methods of conducting O-D survey and explain any one in detail stating its advantages and disadvantages.** (S23 - Q2c, 07 marks)
19. **Define: Desire line, CBD, Centroid.** (W24 - Q2a, 03 marks)
20. **Explain intermediate public transport in brief.** (W24 - Q3 OR a, 03 marks)
21. **Define zone. What are the points to be kept in mind while doing the zoning?** (W25 - Q3 OR b, 04 marks)
22. **What is sampling? Explain various types of sampling.** (W25 - Q3 OR c, 07 marks)
23. **State the importance of zoning.** (W24 - Q3b, 04 marks)

24. **What is zoning? Discuss the points to be kept in mind while doing zoning.** (S23 - Q2b, 04 marks)
25. **Discuss the points to be kept in mind while doing zoning.** (W23 - Q3b, 04 marks)
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Unit 4: Travel Demand Modeling

Repeated Questions:

1. **Explain Gravity model for trip distribution.** (W25 - Q4c, 07 marks); (W24 - Q4b, 04 marks); (S25 - Q3 OR b, 04 marks)
2. **Explain factors affecting modal split.** (W25 - Q4 OR b, 04 marks); (S22 - Q4b, 04 marks); (W24 - Q5b, 04 marks); (W24 - Q4 OR a, 03 marks)
3. **Explain factors affecting trip generation.** (S24 - Q4b, 04 marks); (W24 - Q4 OR b, 04 marks)
4. **What are the factors affecting trip generation and attraction rates?** (S22 - Q4 OR a, 03 marks)
5. **Describe the factors affecting trip production / generation.** (W25 - Q4b, 04 marks)
6. **State advantages of category analysis.** (S24 - Q4a, 03 marks); (W24 - Q4a, 03 marks)
7. **Develop the trip generation equation using linear regression for the following data...** (W25 - Q4 OR c, 07 marks); (S24 - Q4c, 07 marks); (S22 - Q4 OR c, 07 marks)
8. **Enlist various methods of trip generation analysis. Explain category analysis in brief.** (W25 - Q4a, 03 marks)

Other Important Questions (Newest to Oldest):

1. **Obtain the future O - D matrix from the given data Detroit Method.(only 1 iteration).** [Table given - refer Question paper of S24]. (S24 - Q4b, 04 marks)
2. **What is trip generation? Explain in detail the factor governing trip generation and attraction rate.** (S25 - Q4c, 07 marks)
3. **Define the following: (i.) CBD (ii.) Interzonal Trip (iii.) Intrazonal Trip.** (S25 - Q4a, 03 marks)
4. **What is TRC trip assignment model.** (S25 - Q4b, 04 marks)
5. **Write short note on Trip generation.** (W24 - Q4a, 03 marks)
6. **Differentiate between trip end models and trip interchange models.** (W24 - Q4b, 04 marks)
7. **Briefly explain Gravity model with suitable example.** (W24 - Q4c, 07 marks)
8. **Enlist different trip distribution models. Explain growth factor models.** (W24 - Q4 OR c, 07 marks)
9. **The following data shows average household size and total trips made per day for a particular zone of study area. Develop the trip production equation and check its validity.** [Table given - refer Question paper of S23]. (S23 - Q4c, 07 marks)
10. **Discuss the various growth factor methods with their advantages and Disadvantages.** (S23 - Q2 OR c, 07 marks)
11. **Define Trip. Explain the various factors governing the rate of trip generation and Trip attraction.** (S23 - Q3c, 07 marks)
12. **Write a short note on Travel demand forecasting.** (S23 - Q3 OR a, 03 marks)
13. **A study area has been divided in three zones 1, 2, 3. The present trip distribution matrix is given with future total trip productions and trip attractions. Develop the future trip distribution matrix using Detroit method. Do iteration process up to 1 stage.** [Table given - refer Question paper of W24]. (W24 - Q4c, 07 marks)
14. **Give detailed classification of "trip" based on various aspects.** (W24 - Q4a, 03 marks)
15. **Write a short note on "All or Nothing" method of traffic assignment.** (W24 - Q4 OR b, 04 marks)
16. **Briefly discuss about various factors affecting trip production and trip attraction. What are the merits and limitations of 'Category Analysis'.** (W24 - Q2 OR c, 07 marks)
17. **The following data of trips per day was collected for a city area for various family income groups. Develop the linear regression model for the trips generated for this data. Also, find out the number of trips generated if income reaches to Rs. 81000/-** [Table given - refer Question paper of W24]. (W24 - Q3 OR c, 07 marks)
18. **Explain Logit model analysis in brief.** (W23 - Q5a, 03 marks)
19. **Discuss about Logit models for mode choice.** (S22 - Q3c, 07 marks)

20. **Explain any one growth factor models for trip distribution.** (W23 - Q5b, 04 marks)
 21. **Describe Gravity model with formula showing each parameters.** (W23 - Q4c, 07 marks)
 22. **Write short note on: Diversion curve method.** (W23 - Q4b, 04 marks); (S23 - Q4 OR a, 03 marks)
 23. **What are the limitations of growth factor methods for trip distribution?** (S22 - Q4a, 03 marks)
 24. **Write a short note on – Gravity model.** (S22 - Q4 OR b, 04 marks)
 25. **A self contained city having four residential area A, B, C and D & two industrial estates X and Y... Calculate the inter-zonal trips for home to work by gravity model.** (S24 - Q4c, 07 marks)
 26. **Explain Lowry land use model.** (W25 - Q3c, 07 marks)
 27. **Explain Gerin Lowry land use model.** (S24 - Q3c, 07 marks); (W24 - Q3 OR c, 07 marks)
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Unit 5: Mass Transit Systems (Routing, Scheduling, Performance)

Repeated Questions:

1. **Explain corridor identification and corridor screen line analysis.** (W23 - Q5c, 07 marks); (W24 - Q5 OR c, 07 marks)
2. **Describe corridor components with neat sketch.** (W25 - Q5b, 04 marks); (S24 - Q5c, 07 marks)
3. **What do you understand by transit scheduling?** (S22 - Q5 OR a, 03 marks); (W24 - Q5 OR a, 03 marks)
4. **What is corridor? Explain by drawing sketch typical corridor components.** (S25 - Q4 OR c, 07 marks)

Other Important Questions (Newest to Oldest):

1. **Explain in brief, with neat figure - Corridor.** (W23 - Q5 OR a, 03 marks)
2. **Briefly explain zonal regression method of trip generation.** (W24 - Q5 OR b, 04 marks)
3. **How will you identify potential corridor in urban road transit system?** (S22 - Q5 OR c, 07 marks)
4. **Describe briefly corridor identification.** (S22 - Q5c, 07 marks)
5. **Describe corridor identification and screen line identification.** (S23 - Q5 OR b, 04 marks)
6. **Explain various factors affecting route assignment in brief.** (W25 - Q5a, 03 marks)
7. **Classify and explain urban roads with neat sketch.** (W25 - Q5c, 07 marks)
8. **What is modal split? Discuss the factors affecting modal split.** (W24 - Q5b, 04 marks)
9. **Classify and explain various types of urban road pattern.** (W24 - Q5c, 07 marks); (S23 - Q4 OR c, 07 marks)
10. **Write a short note on route classification.** (W24 - Q5a, 03 marks)
11. **Compare Trip-end-type model with Trip-interchange-type model for modal split analysis.** (W24 - Q5b, 04 marks)
12. **Compare BRTS and Metro rail by considering different aspects.** (W24 - Q5c, 07 marks)
13. **Differentiate between captive rider and choice rider.** (W24 - Q5 OR a, 03 marks)
14. **Define route assignment. State the purposes of route assignment.** (W24 - Q5 OR b, 04 marks)
15. **What is route assignment. State major aims of traffic assignment.** (S24 - Q4 OR a, 03 marks)
16. **Explain various transit system performance parameters.** (S24 - Q5 OR c, 07 marks)
17. **State the properties to good schedule.** (S24 - Q5a, 03 marks)
18. **Explain in brief the factors affecting modal split.** (S24 - Q5b, 04 marks)
19. **List out the basic road pattern in urban area with help of neat sketch. Explain anyone pattern.** (S25 - Q5a, 03 marks)
20. **Give classification on urban road and explain in detail.** (S25 - Q5b, 04 marks)
21. **The following data shows average household size and total trips made per day for a particular zone of study area. Develop the trip Production question and check its validity.** [Table given - refer Question paper of S25]. (S25 - Q5c, 07 marks)

Unit 6: Introduction to Goods Movement Study for Urban Area

Repeated Questions:

1. **Describe the components of urban goods movement.** (W25 - Q5 OR b, 04 marks); (S24 - Q5 OR a, 03 marks); (W24 - Q2a, 03 marks)
2. **What are the factors affecting urban goods movement?** (S24 - Q5 OR b, 04 marks); (W24 - Q2b, 04 marks); (S22 - Q5 OR b, 04 marks)
3. **State the problems in urban goods movement.** (W25 - Q5 OR a, 03 marks); (W24 - Q5 OR c, 07 marks)

Other Important Questions (Newest to Oldest):

1. **State the problems in urban goods movement. Explain factors affecting urban goods movement.** (W24 - Q5 OR c, 07 marks)
 2. **What are the components of urban goods traffic?** (S22 - Q5b, 04 marks)
 3. **Write a short note on Urban Goods Movement.** (S23 - Q5b, 04 marks)
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Unit 7: Land Use and Urban Forms

Repeated Questions:

1. **Explain urban forms and structures.** (S22 - Q5a, 03 marks)
2. **Define urban forms. Describe the characteristics of each related to the transportation planning.** (W23 - Q5 OR c, 07 marks)
3. **Explain various urban forms with neat sketch.** (W25 - Q5 OR c, 07 marks)

Other Important Questions (Newest to Oldest):

1. **What is a mega city? Explain in brief.** (S25 - Q4 OR a, 03 marks)
2. **Define: 1) Urban form 2) Urban structure.** (S25 - Q4 OR b, 04 marks)
3. **What is land use? Explain in brief.** (S25 - Q5 OR b, 04 marks)
4. **Define land use. Explain land use and transport interaction.** (W24 - Q3c, 07 marks)
5. **Explain role of transportation at national, regional and urban level.** (S23 - Q3b, 04 marks)
6. **What are the role of transportation in society? Discuss economic and social role of transportation.** (S25 - Q1b, 04 marks)

Comprehensive / Numerical Practice Questions (Spanning Multiple Units)

This section contains repeated numerical/data-based questions that test core modeling techniques from Unit 4. They are grouped here for focused practice.

Repeated Numerical/Data-Based Questions:

1. **Develop the trip generation equation using linear regression for the following data. What would be the coefficient of determination? Also, find out the number of trips generated if number of workers in HH is X.** (Appears in W25, S24, S22, W24 - with varying data).
2. **The following data shows average household size and total trips made per day for a particular zone of study area. Develop the trip production equation and check its validity.** (Appears in S23, W23, S25 - with varying data).
3. **Obtain the future O-D matrix from the given data using the Detroit Method (only 1 iteration).** (Appears in S24 - two variants).
4. **A study area has been divided in three zones... Develop the future trip distribution matrix using Detroit method. Do iteration process up to 1 stage.** (Appears in W24).
5. **The design year total person trips distributed between four zones are shown in the table below. The modal split analysis shows 70/30 for public transport – vs – private car... Develop the trip matrices for the two modes and total vehicular trips.** (Appears in S22).
