Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023**

**Subject Code:3160608 Date:20-07-2023**

**Subject Name:Urban Transportation Planning**

**Time:10:30 AM TO 01:00 PM Total Marks:70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

| | | | **MARKS** |
|---|---|---|---|
| **Q.1** | **(a)** | What are the objectives of urban transportation planning. | **03** |
| | **(b)** | Define (1) Urban area (2) mobility (3) Accessibility | **04** |
| | **(c)** | Explain various urban class groups. | **07** |
| **Q.2** | **(a)** | State the requirements of good urban mass transportation system. | **03** |
| | **(b)** | Explain Para transit mode of transportation. | **04** |
| | **(c)** | Explain sequential decision making process in travel demand analysis with neat sketch. | **07** |
| | | **OR** | |
| | **(c)** | Compare various mass transit system based on technical parameters. | **07** |
| **Q.3** | **(a)** | Define (1) Inter zonal trip (2) Intrazonal trip (3) Through trip. | **03** |
| | **(b)** | 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. | **04** |
| | **(c)** | Explain Gerin Lowry land use model. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | What are the various types of checks for transport surveys? Explain in brief screen line check. | **03** |
| | **(b)** | Write a short note on Zoning. | **04** |
| | **(c)** | Enlist various transportation surveys. Explain Home interview survey in detail. | **07** |
| **Q.4** | **(a)** | State advantages of category analysis. | **03** |
| | **(b)** | Describe the factors affecting trip generation. | **04** |
| | **(c)** | A self contained city having four residential area A, B, C and D & two industrial estates X and Y. The trip generation equation shows that trips from home to work from each residential area are given below during 24 hours per day. There are 3800 jobs in X zone and 4600 jobs in Y zone. It is also known that attraction between zones is inversely proportional to square of journey times between zones. The journey time is mentioned below. Calculate the inter–zonal trips for home to work by gravity model. | **07** |

Journey time

| Zones | X | Y |
|---|---|---|
| A | 14 | 19 |
| B | 16 | 11 |
| C | 9 | 11 |
| D | 14 | 21 |

Trip produced from zone

| Zones | Trips |
|---|---|
| A | 1000 |
| B | 2200 |
| C | 1800 |
| D | 3200 |

**OR**

**Q.4** **(a)** What is route assignment. State major aims of traffic assignment **03**

**(b)** Obtain the future O – D matrix from the given data Detroit Method.( only 1 iteration ) **04**

| O \ D | 1 | 2 | 3 | 4 | Ti |
|---|---|---|---|---|---|
| 1 | 0 | 100 | 150 | 240 | 1000 |
| 2 | 100 | 0 | 200 | 350 | 1500 |
| 3 | 150 | 200 | 0 | 250 | 900 |
| 4 | 240 | 350 | 250 | 0 | 950 |
| Tj | 1000 | 1500 | 900 | 950 | |

**(c)** Develop the trip generation equation using linearregression for the following data. What would be the coefficient ofdetermination? Also, find out the number of trips generated if number of workers in HH are 7. **07**

| No. of workers in HH | 1 | 2 | 3 | 4 | 2 | 5 | 6 | 3 | 4 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Trips per day | 3 | 5 | 6 | 7 | 4 | 10 | 12 | 7 | 9 | 2 |

**Q.5** **(a)** State the properties to good schedule. **03**

**(b)** Explain in brief the factors affecting modal split. **04**

**(c)** Describe corridor components with neat sketch. **07**

**OR**

**Q.5** **(a)** Describe the components of urban goods movement **03**

**(b)** What are the factors affecting urban goods movement? **04**

**(c)** Explain various transit system performance parameters. **07**

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