Enrolment No.

# SARVAJANIK UNIVERSITY

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S-2025 Date: 04-06-25 Time: 09:30 AM to 12:30 PM
Regular / Backlog Exam

**Master of Planning (Urban & Regional Planning) - SEMESTER– II EXAMINATION**

**Course Code: MUUP12203** **Total Marks: 120**
**Course Name: Transport Planning**
**Instructions:**
**1. Attempt all questions.**
**2. Make suitable assumptions wherever necessary.**
**3. Figures to the right indicate full marks.**
**4. Support your answer with neat and illustrated diagram wherever necessary.**

| Q.No | | Marks |
|---|---|---|
| Q1. | | 20 |
| (A) | **State whether following statements are true or false:** | 05 |
| 1 | Non-Home-based trips have neither end of the trip at home | |
| 2 | The quality of transportation facilities and the resulting level of accessibility affect the trip generation. | |
| 3 | Urban roads in India have a homogenous traffic. | |
| 4 | In the context of urban transport, "networks" are defined as system of linked locations. | |
| 5 | Para transit refers to intermediate modes of transport. | |
| | | |
| (B) | **Define/Explain the Terms (ANY FIVE)** | 15 |
| 1 | Urbanization | |
| 2 | Origin-Destination | |
| 3 | Sector theory | |
| 4 | Accessibility | |
| 5 | LOS | |
| 6 | CMP | |
| | | |
| Q.2 | **Answer in detail: (ANY TWO)** | 20 |
| 1 | Explain urban systems and their interrelationships. | |
| 2 | Discuss the need of land-use transport modelling. | |
| 3 | Discuss Lowry model and its significance in transportation planning. | |
| | | |
| Q.3 | **Answer in detail: (ANY TWO)** | 20 |
| 1 | Explain factors to be considered for Transportation Planning Process. | |
| 2 | Explain the four-stage model of urban transportation planning | |
| 3 | Explain Significance of Transportation with reference to Economic Development. Support your answer with Example. | |
| | | |
| Q.4 | **Write a Note: (ANY TWO)** | 30 |
| 1 | Give classification of urban roads. Explain with example of any urban area. | |
| 2 | Enlist & Explain factors governing Road design | |
| 3 | Explain: PCU | |
| 4 | Discuss the Goals of transportation Planning. | |
| Q.5. | **Write a Descriptive Answer** | 30 |

| | | |
|---|---|---|
| 1 | **You are assigned to forecast the traffic volume for a design horizon of 20 years using the Compound Annual Growth Rate (CAGR) method and to estimate the required lane capacity.**<br><br>**Given Data:**<br><br>A mid-sized urban municipality has conducted a classified traffic volume count on a major arterial road. The recorded **Average Daily Traffic (ADT)** in the base year **2025** is as follows:<br><br>**Vehicle Type** \| **Daily Volume (Vehicles/day)**<br>Cars \| 12,000<br>Two-Wheelers \| 25,000<br>Auto Rickshaws \| 5,500<br>Buses \| 1,800<br>Light Commercial Vehicles (LCVs) \| 4,000<br>Trucks \| 2,200<br><br>**PCU factors** (as per IRC standards) are given below:<br><br>**Vehicle Type** \| **PCU Factor**<br>Cars \| 1.0<br>Two-Wheelers \| 0.5<br>Auto Rickshaws \| 1.2<br>Buses \| 3.0<br>LCVs \| 1.5<br>Trucks \| 3.0<br><br>The town is projected to grow at an **average annual growth rate of 5.5%**.<br><br>1. **Calculate the total traffic in PCU/day** for the base year (2025).<br>2. **Forecast the traffic volume (in PCU/day)** for the **design year 2045** using the **Compound Annual Growth Formula**:<br><br>$$T_n = T_0 \times (1+r)^n$$<br>where<br>$T_n$ = traffic at year $n$,<br>$T_0$ = base year traffic,<br>$r$ = annual growth rate (as a decimal),<br>$n$ = number of years (2045 - 2025 = 20 years)<br><br>3. **Estimate the Peak Hour Traffic** assuming **10% of daily traffic** occurs in the peak hour.<br>4. Determine the **number of lanes required** in one direction if the **practical capacity of a single urban lane is 2000 PCU/hour**.<br>5. Provide a brief justification regarding **road widening, land requirement**, and potential **infrastructure improvements** based on the forecast | **20** |
| 2 | Discuss Features of National Urban Transport Policy. | **10** |