



SARVAJANIK UNIVERSITY

S-2026 Date: 13-05-26 Time: 09:30 AM to 11:30 AM
Regular / Backlog Exam

3

Master of Planning (Urban & Regional Planning)& Master of Architecture (Urban Design)
SEMESTER– II EXAMINATION

Course Code: MFGN12202

Total Marks: 50

Course Name: Transportation Planning & Urban Mobility

Instructions:

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

Q1.	Answer in Short (Compulsory) (1 Mark for Each Question)	10 Marks
	State whether following statements are True or False 1. The purpose of Fright Transportation is to provide publicly accessible mobility over specific parts of a city. 2. Travel patterns are Static. 3. Home based trips have one end of the trip at home. 4. Urban roads in India have a heterogeneous mix of traffic. Give Full Form 1. LOS 2. NUTP Explain Terminology 1. Urban Spatial Structure 2. Transportation Planning 3. Para-Transit 4. 15 Minute City	
Q.2	Write a Note (Attend 4 Out of 5) (5 Marks for Each Question)	20 Marks
	1. Explain Significance of Transportation with reference to Economic Development. Support your answer with Example. 2. Explain land-use transport interrelationship and factors affecting that. 3. Explain: Challenges of urban transportation system 4. Explain the four-stage model of urban transportation planning 5. Explain concept of accessibility in land use transportation planning with reference to Hansen's model.	
Q.3.	Write Descriptive Answer (Attend 2 Out of 3) (10 Marks for Each Question)	20 Marks
	1. Explain TOD with appropriate example/case study 2. Give an overview of "Mumbai – Ahmedabad High speed rail corridor" project in India	

3. 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.

Given Data:

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:

Vehicle Type	Daily Volume (Vehicles/day)
Cars	12,000
Two-Wheelers	25,000
Auto Rickshaws	5,500
Buses	1,800
Light Commercial Vehicles (LCVs)	4,000
Trucks	2,200

PCU factors (as per IRC standards) are given below:

Vehicle Type	PCU Factor
Cars	1.0
Two-Wheelers	0.5
Auto Rickshaws	1.2
Buses	3.0
LCVs	1.5
Trucks	3.0

The town is projected to grow at an average annual growth rate of 5.5%.

- Calculate the total traffic in PCU/day for the base year (2025).
- Forecast the traffic volume (in PCU/day) for the design year 2045 using the Compound Annual Growth Formula:

$$T_n = T_0 \times (1 + r)^n$$

Where,

- T_n = traffic at year,
 - T_0 = base year traffic,
 - r = annual growth rate (as a decimal),
 - n = number of years (2045-2025 = 20 Years)
- Estimate the Peak Hour Traffic assuming 10% of daily traffic occurs in the peak hour.
 - Determine the number of lanes required in one direction if the practical capacity of a single urban lane is 2000 PCU/hour.
 - Provide a brief justification regarding road widening, land requirement, and potential infrastructure improvements based on the forecast.