Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

M.Tech Degree S1 (S,FE) Examination August 2025 (2022 Scheme)

Course Code &Name:

221TCE009 URBAN TRANSPORTATION PLANNING

Max. Marks: 60 Duration: 2.5 Hours

PART A

Answer all questions. Each question carries 5 marks Marks

1 What are the key concepts of the systems approach to urban transportation planning, and how do they contribute to effective and sustainable urban mobility? (5)

2 What is the purpose of Origin-Destination (O-D) surveys in transportation planning, and how are they conducted? (5)

3 Discuss the advantages of the gravity model of trip distribution over the growth factor methods. (5)

4 What is the logit model, and how does it differ from the probit model in predicting travel choices? (5)

5 Explain how the use of different transportation planning software aids a transport planner in various studies. (5)

PART B

Answer any 5 questions. Each question carries 7 marks

6 What are the differences between trip based and activity based approaches in transportation planning, and how do they impact the accuracy of travel demand forecasting? (7)

7 How are the study area, cordon line, screen line, and zoning defined in transportation planning, and what roles do they play in data collection and analysis? (7)

8 How is category analysis used in trip generation modelling, and what factors are typically considered in this approach? (7)

9 A mode choice model was developed with the observable utility functions for car, bus and train as shown below: (7)

$V_{car} = 0.10\ IVTT - 0.50\ OVTT - 0.60\ C$

$V_{bus} = -0.20 - 0.30\ IVTT - 0.50\ OVTT - 0.60\ C$

$V_{train} = -0.30\ IVTT - 0.50\ OVTT - 0.60\ C$

Where , IVTT = in vehicle travel time (min);

OVTT = out of vehicle travel time (min);

C = Cost (Rs.).

The table below shows data for one individual.

Mode	IVTT (min)	OVTT (min)	Cost(Rs.)
Car	14	2	6
Bus	20	5	2
Train	16	4	2.5

Using the multinomial logit model and the given data, calculate the probability that this individual will choose each mode (car, bus, train). Also discuss the sensitivity on mode choice, if an extra parking charge of Rs.30 is induced for car.

10 What is the relevance of land use in transportation planning? Discuss Lowry model. (7)

11 Distinguish between Goals, Objectives, Constraints and standards in transportation planning. (7)

12 What is traffic assignment? How are diversion curves used in route assignment analysis? (7)

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