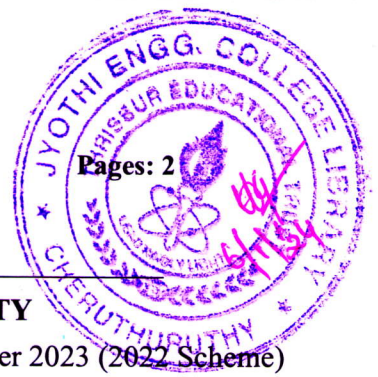


B

221TCE009122301



Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

First Semester M.Tech Degree Regular and Supplementary Examination December 2023 (2022 Scheme)

**Discipline: CIVIL ENGINEERING**

**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 Discuss the concepts of trip based and activity based approaches for travel demand estimation. (5)
- 2 Discuss about the need to collect data in the transportation planning process. What are the various types of data that are required to be collected? (5)
- 3 List types of synthetic trip distribution models. Explain the phases involved in the calibration of Gravity model (5)
- 4 Discuss the factors affecting modal choice? Explain the mathematical concepts used to construct stochastic modal choice functions for individual behaviour modal split models? (5)
- 5 Explain various non-transport solutions for urban transport problems. (5)

**PART B**

*Answer any 5 questions. Each question carries 7 marks*

- 6 With the help of flow chart, explain the traditional four step travel demand forecasting process (7)
- 7 Discuss the objectives of O-D surveys. Explain home interview method of data collection. How the sample size for the same is fixed. (7)
- 8 Using Fratar method estimate given trip matrix. Provide one iteration (7)

O \ D	A	B	C	D
A	-	10	12	18
B	10	-	14	14
C	12	14	-	6
D	18	14	6	-
Estimated future totals	80	114	48	38

- 9 A market segment has 1000 individuals. A multinomial logit mode choice model is calibrated resulting in the following utility function (7)
- $U = ak - 0.32C - 0.02T$ , where  $C$  is out of pocket cost,  $T$  is travel time in minutes and  $ak$  is mode specific constant. The attributes specific to each mode is given below. Predict the number of trips by each mode from the market segment.

Mode	$ak$	$C$	$T$
Bus	0	1.5	35
Rail	0.4	1.75	20
Auto	2.2	2.75	15

- 10 Discuss the purpose of land use transportation model. Describe the structure of Lowry model. (7)
- 11 a) Define home based and non-home based trips with example. (2)
- b) Discuss the guidelines for zoning. Explain the importance of cordon line and screen line. (5)
- 12 Explain the user equilibrium concepts in traffic assignment. List various traffic assignment techniques. Explain any one, stating its advantages and limitations (7)

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