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10CV843

### Eighth Semester B.E. Degree Examination, Feb./Mar. 2022 Urban Transport Planning

Time: 3 hrs.

Max. Marks:100

**Note:1. Answer any FIVE full questions, selecting atleast TWO questions from each part.  
2. Missing data if any may be suitably assumed.**

#### PART – A

- 1 a. Explain the scope of Urban Transport Planning. (06 Marks)  
b. Explain Interdependency / Interrelationship of land use and transportation with a diagram. (06 Marks)  
c. With a neat flow chart, explain the system approach to Transport Planning. (08 Marks)
- 2 a. Mention the stages of Transportation Planning Process. (05 Marks)  
b. Write the flow diagram of stages in Transport Planning Process. (10 Marks)  
c. Explain i) Trip Production ii) Trip Distribution. (05 Marks)
- 3 a. What are the various surveys to be carried out in Transport Planning Process? Explain each of them in detail. (10 Marks)  
b. What are the important points to be kept in mind while dividing the area into different zones? (10 Marks)
- 4 a. What is the objective of Trip generation Stage? Explain the factors governing trip generation and attraction. (10 Marks)  
b. What are the assumptions made in category analysis techniques? (05 Marks)  
c. From the following data obtain the linear regression equation and find the value of coefficient of correlation 'h'. Predict the trip generation if population in a particular zone increases to 50,000.

Traffic zone numbers	1	2	3	4	5	6	7	8
Population zone in (1000's)	26	28	31	33	22	30	20	25
Total trips generated (100's)	12	11	17	15	12	15	9	13

(05 Marks)

#### PART – B

- 5 a. Explain Average Growth Factor Method. (05 Marks)  
b. The total trips produced in and attracted to the 3 zones A, B & C of a survey area in the design year are tabulated as below :

Zone	Trips produced	Trips attracted
A	2000	3000
B	3000	4000
C	4000	2000

It is known that the trips between 2 zones are inversely proportional to the 2<sup>nd</sup> power of the travel time between zones which is uniformly 20 minutes. If the trip interchange between zones B & C is known to be 600, calculate the trip interchange between the zones A & B , A & C , B & A , C & B.

(05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.



- c. A self contained town consists of 4 residential areas A, B, C and D and 2 industrial estates X and Y. Generation equation show that for the design year in question the trips from home to work generated by each residential area per 24 hours day are as follows :  
 $A = 1000$  ,  $B = 2250$  ,  $C = 1750$  ,  $D = 3200$ . There are 3700 Jobs in Industrial estate X and 4500 Jobs in Industrial estate Y. It is known that the attraction between zones is inversely proportional to the square of the Journey times between zones. The Journey times in minutes from home to work are

Zones	A	B	C	D
X	15	15	10	15
Y	20	10	10	20

Calculate and tabulate the interzonal trips for Journeys from home to work. (10 Marks)

- 6 a. What are the factors affecting Modal split? (03 Marks)  
b. Write the flow diagram of trip interchange modal split procedure. (05 Marks)  
c. The design year total person trips between the four zones distributed are shown in the table below Q6(c). The modal split analysis shows 60/40 for Private car V/s Public transport as an overall split. The peak period car occupancy is 1.8 persons per car and 50 persons per bus. Develop the trip matrices for the two modes i.e. car and buses and total vehicular trips. If the goods vehicle constituted 16% of the personal vehicle trips, calculate the total vehicle trip.

O \ D	A	B	C	D
A	-	1500	400	2000
B	300	-	450	480
C	400	1200	-	1420
D	200	250	430	-

Table Q6(c)

(12 Marks)

- 7 a. What is the purpose of Trip Assignment? Mention the different techniques of trip assignment available. (06 Marks)  
b. Sketch and explain the Minimum Path Tree method commonly employed in assignment studies. (06 Marks)  
c. In order to relieve the congestion on an urban street network a motor way is proposed to be constructed. The travel time from one zone centroid to another via proposed motor way is estimated to be 12 minutes. Whereas the time for the same travel via the existing streets is 20 minutes. The flow between 2 zone centroid is 1000 vehicle/hour. Assign this flow between the new motor way and the existing streets. (08 Marks)
- 8 a. What are the difficulties in Transport planning for small and medium Cities in India? (08 Marks)  
b. Write short notes on :  
i) Quick response techniques.  
ii) Traffic restraint measures.  
iii) Disaggregated and Aggregated models.  
iv) Home based and Non Home based trips. (12 Marks)

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