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10CV843

Eighth Semester B.E. Degree Examination, June/July 2016
Urban Transport Planning

Time: 3 hrs.

Max. Marks: 100

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

PART - A

1. a. Highlight various urban transport problems. Explain the essential differences between problem solving process and planning process. (10 Marks)
 b. Explain the system approach to transport planning using a flow chart. (10 Marks)
2. a. Present a simplified flowchart to indicate various stages of urban transport planning. Explain the importance of setting goals and objectives with suitable examples. (10 Marks)
 b. Describe the steps involved in travel estimation process with a suitable diagram. (10 Marks)
3. a. What is zoning? Explain the factors affecting zoning and how it will help the planning process. (10 Marks)
 b. Mention the different types of transport surveys. Explain various inventories that are needed for providing transport facilities. (10 Marks)
4. a. Explain the various factors influencing trip production and attraction. Differentiate between aggregate and disaggregate approach. (10 Marks)
 b. A neighborhood has 205 retail employees and 700 households that are categorized into four types with each having characteristics as follows :

Type	Household size	Number of house hold	Annual income (Rs)	Number of non-workers in peak hour	Number of workers in peak hour
1	2	100	40,000	1	1
2	3	200	50,000	2	1
3	3	350	55,000	1	2
4	4	50	40,000	3	1

Assuming that vehicle based trips for social/recreational and work all peak at the same time, determine the total number of peak hour trips for social/recreational and work trips using the following calibrated trip generation model.

$$T_1 = b_0 + 0.018x_1 + 0.009x_2 + 0.16x_3$$

Where T_1 = number of PH vehicle based social/recreational trips per house hold

x_1 = household size

x_2 = annual household income in thousand of rupees

x_3 = number of non-working household members

b_0 = calibration constant = 0.04.

(10 Marks)



PART – B

- 5 a. Highlight the differences between growth factor and synthetic methods of trip distribution. (10 Marks)
- b. Trip between zones of a proposed New town are assumed to be proportional to the trips produced by the zone of origin and trips attracted by the zone of destination and inversely proportional to the 2nd power of travel time between the zones. (10 Marks)

Zone	Trips produced	Trips attracted
A	3600	2400
B	2000	1600
C	5000	4000

Table Q5(b)(i)

Future Trips and travel times (min)

D \ O	A	B	C
A	-	-	X(12)
B	Y(10)	-	-
C	208(10)	Z(15)	-

Table Q5(b)(ii)

Table Q5(b)(i) – gives trip produced and attracted by respective zones

Table Q5(b)(ii) – gives future trips and travel times (in minutes)

Determine the correct values of x, y and z assuming that the constant of proportionality is the same for all zones. (10 Marks)

- 6 a. Differentiate between “tripend” and “trip interchange” models of modal split specify variables used. (10 Marks)
- b. A market segment consists of 600 individuals. A multinomial Logit mode choice model is calibrated, resulting in the following utility function $u = a_k - 0.30C - 0.02T$, where ‘C’ = is out of pocket cost in rupees,
 T = is travel time in minutes
 a_k = mode specific constant

The attributes, specific to each mode is given in Table Q6(b). Predict the number of trips by each mode from this market segment.

MODE	a_k	C(Rs)	$T_{(min)}$
BUS	0	1.00	30
RAIL	0.40	1.50	20
AUTO	2.00	2.50	15

Table Q6(b)

(10 Marks)

- 7 a. List the various methods of route assignment. Explain any two methods. (10 Marks)
- b. Describe the structure of Lowry model using a flow chart. Explain the use of model for urban structure analysis. (10 Marks)
- 8 a. What are the difficulties in transport planning for small and medium cities? Suggest suitable traffic improvement strategies. (10 Marks)
- b. Describe briefly :
 i) quick response techniques
 ii) traffic restraint measures. (10 Marks)
