R13

Code: 13A01801

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2018
URBAN TRANSPORTATION PLANNING
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
  (a) What are the characteristics of a trip and how do you divide a trip?
  (b) What is the sampling size recommended by BPR for home interview survey?
  (c) What is the expression used for expanding a sample?
  (d) List out the various types of travel demand estimation techniques.
  (e) Explain trip generation and trip attractions with suitable examples.
  (f) A zone is having 300 households with access to car owner ship and another 150 without car owner ship
       and the average trip rates are 4 and 2 for each category respectively. Assuming the future households
       will have same distribution with and without car owner ship as per the current situation, there will be an
       addition of another 600 households. Find out the growth factor and total no of future trips from that zone.
  (g) What is the use of Probit model?
  (h) What are the various parameters used for developing diversion curves?
  (i) Explain briefly about sinking fund factor.
  (j) Discuss about discount rates adopted in the evaluation transportation projects.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2   Discuss about the assumptions made in the travel demand forecasting.
                                    OR
3   What do you understand about travel demand? Explain briefly.

UNIT – II

4   Explain briefly about identifying sturdy area and dividing into traffic zones.
                                    OR
5   Explain the method of organizing road side interview method.

UNIT – III

6   The following data is obtained from a four zone traffic study for a base year and work out the future trips
       using Furness method.

O \ D	Base year trips zone wise				Predicted future trips
	1	2	3	4	
1	10	12	15	23	175
2	14	16	30	15	225
3	20	16	18	10	120
4	16	24	7	22	108
Predicted future trips	160	170	120	178	

                                    OR

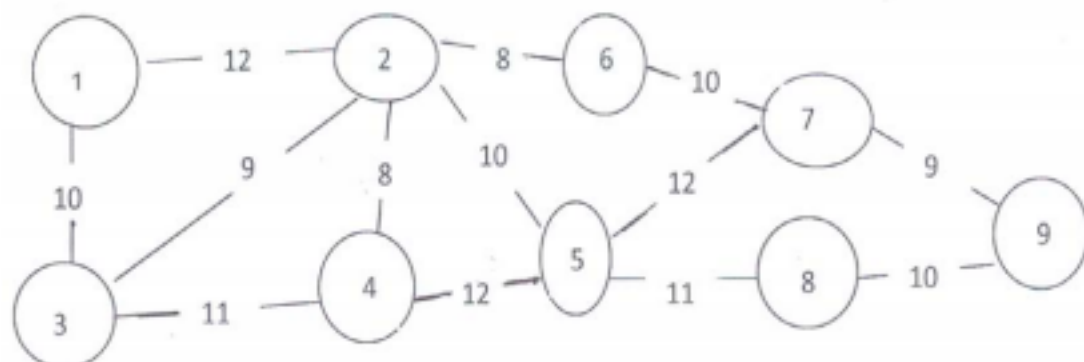7   Develop the regression equation for the following data and justify the model.

S.no	Trips generated	House hold size
1	50	20
2	70	30
3	80	40
4	100	50
5	100	60

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8   Find the shortest path for the following network from node 1 to all other nodes. The travel times in minutes are indicated in the network.

OR

9   The following utility function is used in a mode choice case.

$U_k = A_k - 0.05 T_a - 0.04 T_w - 0.02 T_t - 0.01C$

Where T_a is the access time, T_w is the waiting time, T_t is the travel time and C is the travel out of pocket cost. Apply the logit model to calculate the division of usage between motorized two wheeler (A_k = -0.004) and the bus (A_k = -0.4) per the data given below. Estimate the shift in the patronage that would result in doubling the bus out of travel cost.

Mode	T_a minutes	T_w minutes	T_t minutes	C Rupees
Motorized two wheeler	10	0	45	200
Bus	25	12	50	140

10   Compare various methods of Economic evaluation

OR

11   A single lane road is 60 km long to be widened to two lane at a cost 12.0 lakhs per km, including all improvements. The cost of operation of vehicles on the single lane road is Rs. 2.3 per vehicle km where as it is Rs. 1.9 per vehicle km on the improved facility. The average traffic may be assumed as 3000 vehicles per day for a design period of 20 years. The interest rate is assumed as 9% per year. The cost of maintenance is Rs.10000 per km on the improved road. Is the investment in the improvement scheme is worthwhile.

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