

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022  
**Urban Transportation Planning**

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

**Module-1**

- 1 a. List the merits and demerits of public and private transport systems. (08 Marks)  
b. With a flow chart, explain the various steps in transport planning process. (08 Marks)

OR

- 2 a. Define urbanization and list various urban class groups. (08 Marks)  
b. With a flow chart, explain the system approach to transportation planning. (08 Marks)

**Module-2**

- 3 a. Define study area and explain the purpose of zoning. Mention the points to be kept in mind while forming zones in a study area. (08 Marks)  
b. Explain the Home Interview Survey, in detail. (08 Marks)

OR

- 4 a. What are the various inventory of transport facilities? What data is to be collected under these? Explain. (08 Marks)  
b. What is the significance of sampling? Explain sampling technique with different types of samples. (08 Marks)

**Module-3**

- 5 a. Mention the various elements in category analysis method. Explain it with its advantages and disadvantages. (06 Marks)  
b. Three zones A, B and C are shown in Fig.Q5(b), with trip interchanges between A and B are 20, between zones B and C are 30, and between C and A are 40. These are non-directional interchanges. Growth factors of 2.5, 3 and 1.5 are forecasted for the zones A, B and C respectively. Using Fratar method, compute the zonal interchanges in the forecast year.

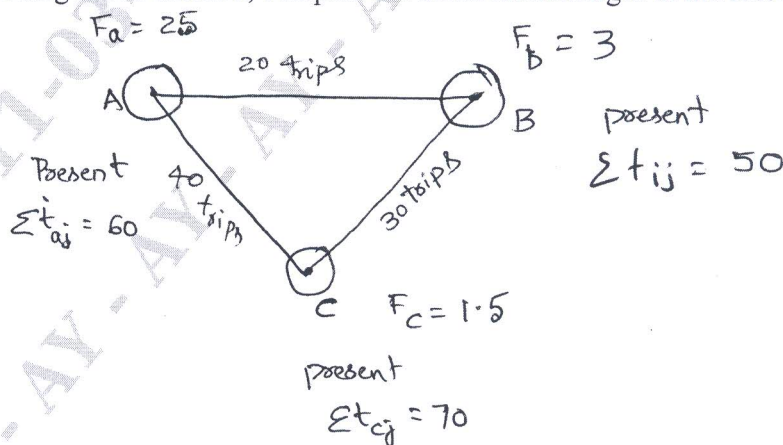


Fig.Q5(b)

(10 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.

OR

- 6 a. List the various drawbacks of growth factor methods. (04 Marks)  
 b. A study area has been divided into four zones A, B, C and D. The results of trip generation analysis and the present trip distribution matrix is included in the following table:

		A	B	C	D
Produced trips	Present	150	90	180	80
	Future	300	170	270	240
Anticipated trips	Present	120	100	150	130
	Future	180	300	300	200

Develop the future distribution of trip matrix using:

- (i) Uniform factor method (ii) Average factor method

Present trip distribution matrix is as shown below:

	D	A	B	C	D
O					
A	40	40	40	30	
B	20	20	30	20	
C	40	30	50	60	
D	20	10	30	20	

(12 Marks)

**Module-4**

- 7 a. Mention the various objectives of trip distribution. List the various growth factor methods and synthetic methods. (06 Marks)  
 b. Three zones A, B and C are connected by two lane roads as shown in sketch Fig.Q7(b). Using Logit model, find the two way volume in cars per day on the road AC, if the average car occupancy is 2.5, consider the disutility function as  $U(x) = 0.86 - 0.08(TT_{car} - TT_{bus})$ . The total trip exchanges between the zones are as given below:

From	A	B	A	C	B	C
To	B	A	C	A	C	B
Person trips per day	1200	1500	500	1800	400	500

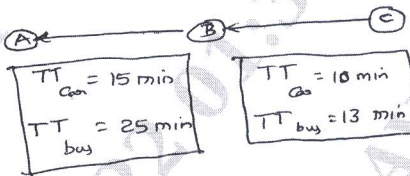


Fig.Q7(b)

(10 Marks)

OR

- 8 a. Explain the various advantages and disadvantages of pre distributed modal split. (06 Marks)  
 b. Define modal split and explain in brief the factors affecting modal split. (10 Marks)

**Module-5**

- 9 a. What is the purpose of trip assignment? Explain the use of minimum path tree in trip assignment technique. (06 Marks)  
 b. Define trip assignment. List the various methods of trip assignment. (05 Marks)  
 c. In order to relieve congestion on an urban street network a motorway is proposed to be constructed. The travel time from one zone centroid to another, via the proposed motorway is estimated to be 10 minutes, whereas the time for the same travel, via the existing streets is 18 minutes. The flow between the two zone centroids is 1000 vehicles per hour. Assign the flow between the new motorway and existing streets. (05 Marks)

OR

- 10 a. Explain the various diversion curves used in trip assignment. (08 Marks)  
 b. With a flow chart, explain the fundamental structure of Lowry model and explain the principal components in it. (08 Marks)