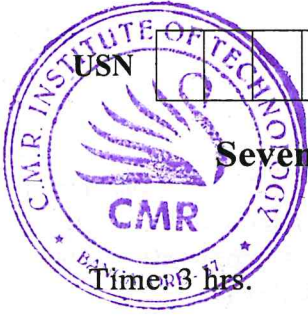# CBCS SCHEME

15CV751

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Urban Transportation and Planning

Time: 3 hrs.

Max. Marks: 80

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. Missing data, if any, may be suitably assumed.

Module-1

1   a. Explain Briefly, the need and role of metro rail transportation with its relative advantages.
                                                                                        (08 Marks)
    b. List the various urban traffic and transport problems in India.   **(08 Marks)**

OR

2   a. Compare the mass, public and private transport systems, in detail.   **(08 Marks)**
    b. Explain briefly, the various stages involved in urban transport planning process.   **(08 Marks)**

Module-2

3   a. Define zone. Mention the different factors considered in dividing the whole area into zones.
                                                                                        (08 Marks)
    b. List various surveys required to collect data in urban transport planning and explain home interview survey, in detail.   **(08 Marks)**

OR

4   a. Briefly explain, the expansion of data from samples and expansion factors used in urban transport planning.   **(06 Marks)**
    b. Explain with sketch, various basic movements in transportation survey.   **(05 Marks)**
    c. Explain four important factors considered while selecting external cordon line. **(05 Marks)**

Module-3

5   a. Explain the various factors governing trip generation and trip attraction.   **(06 Marks)**
    b. List the various assumptions considered in category analysis.   **(05 Marks)**
    c. Explain multiple linear regression analysis.   **(05 Marks)**

OR

6   a. Briefly explain Furness method, with its advantages and disadvantages.   **(06 Marks)**
    b. The table below gives data for vehicle trips/day, income and persons in a household for one of the study area. Develop the trip generation equations between income and household persons. Indicate which one is more reliable and why?

Income (lakhs/year)	5	10	15	20	25	30
Persons/ household	4	6	8	9	8	6
Trips/day	5	6	8	4	4	6

                                                                                        (10 Marks)

Module-4

7 a. Explain the various factors governing modal split. **(06 Marks)**

   b. A self contained town consists of four residential areas A, B, C and D and two intermediate estates X and Y. Generation equations shows that, for the design year (proposed), the trips from home to work generated by each residential area per 24 hour as follows :
   A – 1000, B – 2250, C – 1750, D – 3200. There are 3700 jobs in industrial estate X and 4,500 in industrial estate Y. Attractions between zones are inversely proportional to square of journey times between zones. The journey times in minutes from home to work are :

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

Table Q7(b)

   Calculate and tabulate the inter zonal trips for journey from home to work. **(10 Marks)**

OR

8 a. With the help of flow diagram explain the modal split carried out after trip distribution. **(08 Marks)**

   b. A market segment contains 600 individuals. A multibionomial legit mode choice model is calibrated, resulting the following unity function $u = a_k - 0.3 C - 0.02T$ where c = out of pocket cost in rupees, T – travel time in minutes, a_k – mode specific constant. The attributes, specific to each mode is given in the Table Q8(b). Predict the number of trips by each mode for 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 Q8(b)

(08 Marks)

Module-5

9 a. Explain in detail, various diversion curves used in trip assignment technique. **(08 Marks)**

   b. What is the purpose of trip assignment? Explain the minimum path tree method, in trip assignment technique. **(08 Marks)**

OR

10 a. With a flow chart, explain the fundamental structure of Lowry model. **(08 Marks)**

    b. List the various assignment techniques and explain all or Nothing method. **(08 Marks)**

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