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15CV751

Seventh Semester B.E. Degree Examination, Aug./Sept.2020
Urban Transportation and Planning

Time: 3 hrs.

Max. Marks: 80

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

Module-1

1   a. What are the major transport problems in urban areas? **(08 Marks)**
    b. Briefly explain the various steps involved in Urban Transportation Planning process. **(08 Marks)**

OR

2   a. Compare Bus Rapid Transport System and Metro Rail. **(08 Marks)**
    b. Briefly explain the co-ordination required in public transportation. **(08 Marks)**

Module-2

3   a. Define Study area and Cordon line. What are the factors to be considered while selecting Cordon line? **(08 Marks)**
    b. Define Zone. What are the factors to be considered while dividing the area into zones? **(08 Marks)**

OR

4   a. Explain the following types of surveys :
       (i) Home Interview Survey
       (ii) Road Side Interview Survey. **(12 Marks)**
    b. Briefly explain expansion of data form samples. **(04 Marks)**

Module-3

5   a. Explain the various factors affecting trip generation and attraction rates. **(08 Marks)**
    b. A city has recently conducted a travel survey and details are given as below :

Trips (Y)	5126	3764	4030	3921	1644	4467	3407	1143	3202
Population (X)	8212	5818	9789	6805	4054	9463	2735	1784	4418

   Develop a mathematical model. Also determine co-efficient of regression. **(08 Marks)**

OR

6   a. With assumptions, explain the concept of category analysis. **(06 Marks)**
    b. Explain Factor method of trip distribution. **(06 Marks)**
    c. What are the advantages and disadvantages of growth factor methods? **(04 Marks)**

Module-4

7   a. Write a note on :
       (i) Gravity model   (ii) Opportunity model **(08 Marks)**

b. Distribute 602 work trip production from Zone-3 to Zones 1, 2, 4 and 5 from the data given below. The inter-zonal travel time for Zone-3 is 5 minutes.
Zone-1 – 1080 work trip attractions, travel time – 20 mins.
Zone-2 – 531 work trip attractions, travel time – 7 mins.
Zone-3 – 76 work trip attractions, travel time – 5 mins.
Zone-4 – 47 work trip attractions, travel time – 10 mins.
Zone-5 – 82 work trip attractions, travel time – 25 mins.

Travel time and travel time factors are given as below:

Travel time in minutes	20	7	5	10	25
Travel time factor	6	29	45	18	4

(08 Marks)

OR

8 a. Define Modal split. Explain in brief factors affecting model split. (08 Marks)

 b. The calibrated utility function for travel in a city by automobile, bus and light rail is
$U = a - 0.002X_1 - 0.05X_2$
where X_1 = travel cost and X_2 is travel time. Calculate the model split for the given values.

Mode	a	X_1	X_2
Automobile	– 0.30	130	25
Bus	– 0.35	75	35
Light rail	– 0.40	90	40

(08 Marks)

Module-5

9 a. Define traffic assignment. What are the applications of traffic assignment? (06 Marks)

 b. Write a note on minimum path tree. (04 Marks)

 c. Explain All or nothing assignment technique. (06 Marks)

OR

10 a. Write short notes on :
(i) Capacity restraint assignment
(ii) Equilibrium assignment. (10 Marks)

 b. Explain salient features of Lowry model. (06 Marks)

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