# APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY

**08 PALAKKAD CLUSTER**

**Q. P. code :TD1171** **(pages: 3 )** **Name:**

**Reg No:**

**FIRST SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017**

**CIVIL( Transportation Engineering)**

**08CE6205** **URBAN TRANSPORTION PLANNING**

**Time:3 hours** **Max.marks: 60**

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

| Q.no. | Module 1 | Marks |
|---|---|---|
| 1.a | Explain the importance of transportation planning for the betterment of society. | 3 |
| | **Answer b or c** | |
| b | With a neat flowchart explain the sequence of activities involved in transport analysis. | 6 |
| c | What are the various problems faced by a transport planner? | 6 |

| Q.no. | Module 2 | Marks |
|---|---|---|
| 2.a | How will you classify trips? Give examples. | 3 |
| | **Answer b or c** | |
| b | What are expansion factors? | 6 |
| c | The following is the average number of trips made in an urban area | 6 |

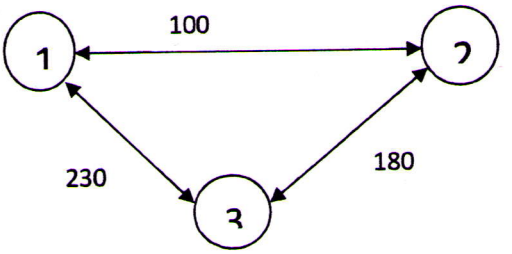
| Household size | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| No of trips/day | 3 | 6 | 10 | 4 | 6 | 2 |

Develop a trip generation equation for the area and calculate all the statistics to check validity of the equation. The value of t for 3 degrees of freedom at 5% level of significance is 2.353.

| Q.no. | Module 3 | Marks |
|---|---|---|
| 3.a | Differentiate between Trip End and Trip interchange models | 3 |

**Answer b or c**

b The base year trips between the zones 1, 2, and 3, for the city, for the year 1995 are provide in the network shown below. Compute the future trips between the zones for the horizon year, if the growth factors for the zones 1,2 and 3 are, 2, 2.5 and 1.8 respectively. **6**




c The productions from zone 1, 2 and 3 are 110, 94, 112 and attractions to zone 1,2 and 3 are 99, 113, 104. The function f(cij ) is defined as f(cij ) = $\frac{1}{C_{ij}^2}$. The cost matrix is as shown; **6**

| | | |
|---|---|---|
| 1.0 | 1.2 | 1.7 |
| 1.2 | 1.0 | 1.3 |
| 1.7 | 1.3 | 1.0 |

Use doubly constrained gravity model and compute the trip matrix. Provide one complete iteration

**Q.no.** **Module 4** **Marks**

4.a What are the various factors of a transport system that you consider while selecting a suitable mode of travel? **3**

**Answer b or c**

b Explain the importance of discriminant analysis approach mode split analysis. **6**

c The total number of trips from zone i to zone j is 4200. Currently all trips are made by car. Government has two alternatives- to introduce a train or a bus. The travel characteristics and respective coefficients are given in table. Decide the best alternative in terms of trips carried. **6**

| | $t_{ij}^{v}$ | $t_{ij}^{walk}$ | $t_{ij}^{t}$ | $F_{ij}$ | $\varphi_{ij}$ |
|---|---|---|---|---|---|
| Coefficient | 0.06 | 0.05 | 0.07 | 0.2 | 0.2 |
| Car | 25 | - | - | 22 | 5 |
| Bus | 29 | 7 | 4 | 8 | - |
| train | 17 | 15 | 5 | 6 | - |

**Q.no.** **Module 5** **Marks**

5.a Using suitable diagrams explain diversion curves. **4**

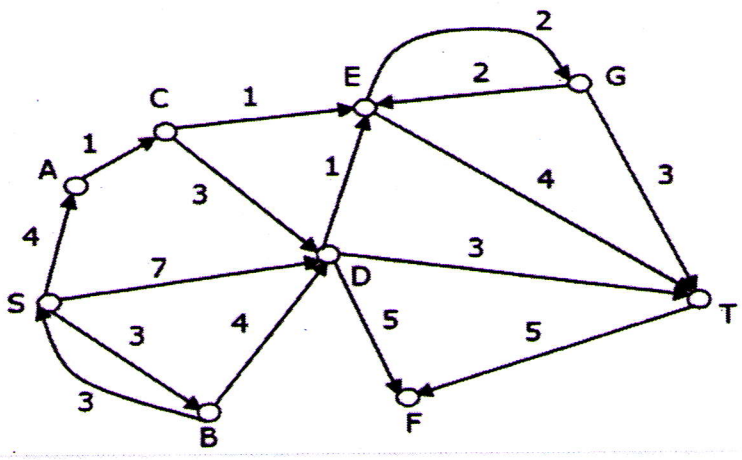
**Answer b or c**

b For the given O-D data and network data, find the assigned traffic volumes in all links using all or nothing assignment. All links are two way.

| | Destination zones | | | | |
|---|---|---|---|---|---|
| Origin zones | 1 | 2 | 3 | 4 | 5 |
| 1 | 0 | 100 | 100 | 200 | 150 |
| 2 | 400 | 0 | 200 | 100 | 500 |
| 3 | 200 | 100 | 0 | 100 | 150 |
| 4 | 250 | 150 | 300 | 0 | 400 |
| 5 | 200 | 100 | 50 | 350 | 0 |

| Link No | Node from | Node To | Travel time (min) |
|---|---|---|---|
| 1 | 1 | 2 | 8 |
| 2 | 1 | 5 | 5 |
| 3 | 2 | 3 | 3 |
| 4 | 2 | 4 | 5 |
| 5 | 2 | 5 | 12 |
| 6 | 3 | 4 | 7 |
| 7 | 4 | 5 | 6 |

c Find the minimum path from vertex S to vertex T using Dijkstra algorithm all links are two way. **8**




| Q.no. | Module 6 | Marks |
|---|---|---|
| 6.a | Write a short note on any two transport planning soft wares. | 4 |

**Answer b or c**

b What is the relevance of Land Use in Transportation Planning? Discuss Lowry model. **8**

c What is corridor? How do you determine their performance? When are they termed as deficient? **8**