**CE 45000: Transport Policy and Planning**

**Due Thursday, November 29, 2018**

**Problem 1:** You estimated that total 1000 trips will be distributed between TAZ 12 and TAZ 15 among 5 different mode of transportation including carpool, taxi, bus, light rail, and solo driver. How will you distribute the trips. Use following information:

Utility function: $Ui = ai – 0.02·IVTTi – 0.04·OVTTi – 0.0026·COSTi$

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MODE | Mode specific constant | IVTT (min) | OVTT (min) | COST (cent) |
| Solo driver | 0.00 | 17 | 5 | 200.0 |
| Carpool | -0.25 | 21 | 5 | 100.0 |
| Taxi | -0.40 | 17 | 4 | 320.0 |
| Light rail | -0.28 | 25 | 8 | 120.0 |
| Bus | -0.30 | 33 | 7 | 160.0 |

**Problem 2:** Can you go node 1 to node 12 in 10 hours? Prove. Use Dijkstra’s Algorithm.

150

165

145

275

155

340

95

260

85

130

110

45

130

285

200

330

65

130

**Problem 3:** A transit agency is evaluating alternatives for a light rail line construction. Five alternatives are evaluated for five different criteria (see following table). Evaluate the alternatives using ranking method.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Criterion (MOE)** | **Ranking** | **Alt 1** | **Alt 2** | **Alt 3** | **Alt 4** | **Alt 5** |
| 1 | Daily ridership (1000s) | 2 | 25 | 23 | 20 | 18 | 17 |
| 2 | Annual return on investment (%) | 1 | 13 | 14 | 11 | 13.5 | 15 |
| 3 | Length of line (mi) | 3 | 8 | 7 | 6 | 5 | 5 |
| 4 | Passengers seated in peak hour (%) | 3 | 25 | 35 | 40 | 50 | 50 |
| 5 | Auto drivers diverted (1000s) | 4 | 3.5 | 3 | 2 | 1.5 | 1.5 |