



Experiment No. 7

January 27, 2016, 4:50 pm

Calibration Of Singly Constrained Gravity Model (Origin)

Input Values :

Selected Frictional Functions : Exponential Function $[F_{ij} = e^{-BC_{ij}}]$

Solution :

Trip Matrix with respect to Optimal Beta Value (Minimum SSE)		
Origin	Destination	No. of Trips
1	1	177
1	2	583
1	3	357
1	4	352
1	5	273
1	6	259



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

1	7	377
1	8	607
1	9	311
1	10	598
1	11	90
1	12	163
1	13	465
1	14	652

Origin	Destination	No. of Trips
2	1	336
2	2	1129
2	3	688
2	4	673
2	5	519



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

2	6	495
2	7	722
2	8	1175
2	9	599
2	10	1150
2	11	172
2	12	314
2	13	896
2	14	1254

Origin	Destination	No. of Trips
3	1	184
3	2	613
3	3	390
3	4	375



3	5	285
3	6	270
3	7	396
3	8	643
3	9	334
3	10	645
3	11	94
3	12	175
3	13	496
3	14	697

Origin	Destination	No. of Trips
4	1	199
4	2	660
4	3	413



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

4	4	407
4	5	308
4	6	293
4	7	429
4	8	690
4	9	354
4	10	681
4	11	102
4	12	186
4	13	529
4	14	741

Origin	Destination	No. of Trips
5	1	383
5	2	1265



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

5	3	779
5	4	763
5	5	600
5	6	565
5	7	826
5	8	1318
5	9	675
5	10	1298
5	11	197
5	12	356
5	13	1009
5	14	1414

Origin	Destination	No. of Trips
6	1	78



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

6	2	259
6	3	160
6	4	157
6	5	121
6	6	119
6	7	170
6	8	271
6	9	139
6	10	267
6	11	40
6	12	72
6	13	207
6	14	291

Origin	Destination	No. of Trips
--------	-------------	--------------



7	1	316
7	2	1050
7	3	649
7	4	635
7	5	494
7	6	472
7	7	710
7	8	1098
7	9	562
7	10	1081
7	11	166
7	12	300
7	13	840
7	14	1178



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

Origin	Destination	No. of Trips
8	1	656
8	2	2205
8	3	1354
8	4	1319
8	5	1018
8	6	969
8	7	1411
8	8	2360
8	9	1181
8	10	2276
8	11	338
8	12	630
8	13	1761
8	14	2467



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

Origin	Destination	No. of Trips
9	1	176
9	2	585
9	3	369
9	4	357
9	5	273
9	6	259
9	7	379
9	8	614
9	9	327
9	10	618
9	11	89
9	12	168
9	13	480
9	14	674



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

Origin	Destination	No. of Trips
10	1	329
10	2	1101
10	3	691
10	4	664
10	5	511
10	6	487
10	7	709
10	8	1159
10	9	600
10	10	1168
10	11	168
10	12	313
10	13	891
10	14	1250



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

Origin	Destination	No. of Trips
11	1	173
11	2	576
11	3	356
11	4	349
11	5	273
11	6	260
11	7	384
11	8	603
11	9	308
11	10	593
11	11	95
11	12	170
11	13	460
11	14	647



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

Origin	Destination	No. of Trips
12	1	468
12	2	1565
12	3	968
12	4	942
12	5	727
12	6	692
12	7	1025
12	8	1673
12	9	844
12	10	1627
12	11	252
12	12	489
12	13	1269
12	14	1792



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

Origin	Destination	No. of Trips
13	1	435
13	2	1457
13	3	899
13	4	877
13	5	675
13	6	643
13	7	936
13	8	1527
13	9	792
13	10	1512
13	11	223
13	12	421
13	13	1221
13	14	1700



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

Origin	Destination	No. of Trips
14	1	270
14	2	902
14	3	567
14	4	549
14	5	420
14	6	399
14	7	583
14	8	947
14	9	493
14	10	945
14	11	138
14	12	261
14	13	750
14	14	1083



Minimum Residual = 341099.14338838

Optimal Beta = 0.001

Target Oi	Modelled Oi	Target Dj	Modelled Dj
5270.4472	5270.4472	4165.0506	4185.0582204155
10128.2668	10128.2668	13855.7446	13958.291147719
5604.2892	5604.2892	8628.5458	8646.677522012
5998.5025	5998.5025	8404.532	8427.4188743412
11456.2999	11456.2999	6472.89	6503.8449820082
2358.6434	2358.6434	6218.9666	6188.4779994328
9558.7382	9558.7382	9102.2551	9065.3316435284
19951.617	19951.617	14622.8974	14692.821472414
5375.0067	5375.0067	7522.4638	7525.5045691021
10047.3291	10047.3291	14418.3725	14466.266209042
5253.7247	5253.7247	2196.2642	2171.0042596878
14338.1652	14338.1652	4103.132	4023.4445006347



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

13326.7812	13326.7812	11280.0717	11280.090535402
8311.1379	8311.1379	15987.7627	15844.71706426

Beta	Residual SSE
0.001	341099.14338838
0.002	341099.14338838
0.003	341099.14338838
0.004	341099.14338838
0.005	341099.14338838
0.006	341099.14338838
0.007	341099.14338838
0.008	341099.14338838
0.009	341099.14338838
0.01	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.011	341099.14338838
0.012	341099.14338838
0.013	341099.14338838
0.014	341099.14338838
0.015	341099.14338838
0.016	341099.14338838
0.017	341099.14338838
0.018	341099.14338838
0.019	341099.14338838
0.02	341099.14338838
0.021	341099.14338838
0.022	341099.14338838
0.023	341099.14338838
0.024	341099.14338838
0.025	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.026	341099.14338838
0.027	341099.14338838
0.028	341099.14338838
0.029	341099.14338838
0.03	341099.14338838
0.031	341099.14338838
0.032	341099.14338838
0.033	341099.14338838
0.034	341099.14338838
0.035	341099.14338838
0.036	341099.14338838
0.037	341099.14338838
0.038	341099.14338838
0.039	341099.14338838
0.04	341099.14338838



0.041	341099.14338838
0.042	341099.14338838
0.043	341099.14338838
0.044	341099.14338838
0.045	341099.14338838
0.046	341099.14338838
0.047	341099.14338838
0.048	341099.14338838
0.049	341099.14338838
0.05	341099.14338838
0.051	341099.14338838
0.052	341099.14338838
0.053	341099.14338838
0.054	341099.14338838
0.055	341099.14338838



0.056	341099.14338838
0.057	341099.14338838
0.058	341099.14338838
0.059	341099.14338838
0.06	341099.14338838
0.061	341099.14338838
0.062	341099.14338838
0.063	341099.14338838
0.064	341099.14338838
0.065	341099.14338838
0.066	341099.14338838
0.067	341099.14338838
0.068	341099.14338838
0.069	341099.14338838
0.07	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.071	341099.14338838
0.072	341099.14338838
0.073	341099.14338838
0.074	341099.14338838
0.075	341099.14338838
0.076	341099.14338838
0.077	341099.14338838
0.078	341099.14338838
0.079	341099.14338838
0.08	341099.14338838
0.081	341099.14338838
0.082	341099.14338838
0.083	341099.14338838
0.084	341099.14338838
0.085	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.086	341099.14338838
0.087	341099.14338838
0.088	341099.14338838
0.089	341099.14338838
0.09	341099.14338838
0.091	341099.14338838
0.092	341099.14338838
0.093	341099.14338838
0.094	341099.14338838
0.095	341099.14338838
0.096	341099.14338838
0.097	341099.14338838
0.098	341099.14338838
0.099	341099.14338838
0.1	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.101	341099.14338838
0.102	341099.14338838
0.103	341099.14338838
0.104	341099.14338838
0.105	341099.14338838
0.106	341099.14338838
0.107	341099.14338838
0.108	341099.14338838
0.109	341099.14338838
0.11	341099.14338838
0.111	341099.14338838
0.112	341099.14338838
0.113	341099.14338838
0.114	341099.14338838
0.115	341099.14338838



0.116	341099.14338838
0.117	341099.14338838
0.118	341099.14338838
0.119	341099.14338838
0.12	341099.14338838
0.121	341099.14338838
0.122	341099.14338838
0.123	341099.14338838
0.124	341099.14338838
0.125	341099.14338838
0.126	341099.14338838
0.127	341099.14338838
0.128	341099.14338838
0.129	341099.14338838
0.13	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.131	341099.14338838
0.132	341099.14338838
0.133	341099.14338838
0.134	341099.14338838
0.135	341099.14338838
0.136	341099.14338838
0.137	341099.14338838
0.138	341099.14338838
0.139	341099.14338838
0.14	341099.14338838
0.141	341099.14338838
0.142	341099.14338838
0.143	341099.14338838
0.144	341099.14338838
0.145	341099.14338838



0.146	341099.14338838
0.147	341099.14338838
0.148	341099.14338838
0.149	341099.14338838
0.15	341099.14338838
0.151	341099.14338838
0.152	341099.14338838
0.153	341099.14338838
0.154	341099.14338838
0.155	341099.14338838
0.156	341099.14338838
0.157	341099.14338838
0.158	341099.14338838
0.159	341099.14338838
0.16	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.161	341099.14338838
0.162	341099.14338838
0.163	341099.14338838
0.164	341099.14338838
0.165	341099.14338838
0.166	341099.14338838
0.167	341099.14338838
0.168	341099.14338838
0.169	341099.14338838
0.17	341099.14338838
0.171	341099.14338838
0.172	341099.14338838
0.173	341099.14338838
0.174	341099.14338838
0.175	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.176	341099.14338838
0.177	341099.14338838
0.178	341099.14338838
0.179	341099.14338838
0.18	341099.14338838
0.181	341099.14338838
0.182	341099.14338838
0.183	341099.14338838
0.184	341099.14338838
0.185	341099.14338838
0.186	341099.14338838
0.187	341099.14338838
0.188	341099.14338838
0.189	341099.14338838
0.19	341099.14338838



0.191	341099.14338838
0.192	341099.14338838
0.193	341099.14338838
0.194	341099.14338838
0.195	341099.14338838
0.196	341099.14338838
0.197	341099.14338838
0.198	341099.14338838
0.199	341099.14338838
0.2	341099.14338838
0.201	341099.14338838
0.202	341099.14338838
0.203	341099.14338838
0.204	341099.14338838
0.205	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.206	341099.14338838
0.207	341099.14338838
0.208	341099.14338838
0.209	341099.14338838
0.21	341099.14338838
0.211	341099.14338838
0.212	341099.14338838
0.213	341099.14338838
0.214	341099.14338838
0.215	341099.14338838
0.216	341099.14338838
0.217	341099.14338838
0.218	341099.14338838
0.219	341099.14338838
0.22	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.221	341099.14338838
0.222	341099.14338838
0.223	341099.14338838
0.224	341099.14338838
0.225	341099.14338838
0.226	341099.14338838
0.227	341099.14338838
0.228	341099.14338838
0.229	341099.14338838
0.23	341099.14338838
0.231	341099.14338838
0.232	341099.14338838
0.233	341099.14338838
0.234	341099.14338838
0.235	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.236	341099.14338838
0.237	341099.14338838
0.238	341099.14338838
0.239	341099.14338838
0.24	341099.14338838
0.241	341099.14338838
0.242	341099.14338838
0.243	341099.14338838
0.244	341099.14338838
0.245	341099.14338838
0.246	341099.14338838
0.247	341099.14338838
0.248	341099.14338838
0.249	341099.14338838
0.25	341099.14338838



0.251	341099.14338838
0.252	341099.14338838
0.253	341099.14338838
0.254	341099.14338838
0.255	341099.14338838
0.256	341099.14338838
0.257	341099.14338838
0.258	341099.14338838
0.259	341099.14338838
0.26	341099.14338838
0.261	341099.14338838
0.262	341099.14338838
0.263	341099.14338838
0.264	341099.14338838
0.265	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.266	341099.14338838
0.267	341099.14338838
0.268	341099.14338838
0.269	341099.14338838
0.27	341099.14338838
0.271	341099.14338838
0.272	341099.14338838
0.273	341099.14338838
0.274	341099.14338838
0.275	341099.14338838
0.276	341099.14338838
0.277	341099.14338838
0.278	341099.14338838
0.279	341099.14338838
0.28	341099.14338838



0.281	341099.14338838
0.282	341099.14338838
0.283	341099.14338838
0.284	341099.14338838
0.285	341099.14338838
0.286	341099.14338838
0.287	341099.14338838
0.288	341099.14338838
0.289	341099.14338838
0.29	341099.14338838
0.291	341099.14338838
0.292	341099.14338838
0.293	341099.14338838
0.294	341099.14338838
0.295	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.296	341099.14338838
0.297	341099.14338838
0.298	341099.14338838
0.299	341099.14338838
0.3	341099.14338838
0.301	341099.14338838
0.302	341099.14338838
0.303	341099.14338838
0.304	341099.14338838
0.305	341099.14338838
0.306	341099.14338838
0.307	341099.14338838
0.308	341099.14338838
0.309	341099.14338838
0.31	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.311	341099.14338838
0.312	341099.14338838
0.313	341099.14338838
0.314	341099.14338838
0.315	341099.14338838
0.316	341099.14338838
0.317	341099.14338838
0.318	341099.14338838
0.319	341099.14338838
0.32	341099.14338838
0.321	341099.14338838
0.322	341099.14338838
0.323	341099.14338838
0.324	341099.14338838
0.325	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.326	341099.14338838
0.327	341099.14338838
0.328	341099.14338838
0.329	341099.14338838
0.33	341099.14338838
0.331	341099.14338838
0.332	341099.14338838
0.333	341099.14338838
0.334	341099.14338838
0.335	341099.14338838
0.336	341099.14338838
0.337	341099.14338838
0.338	341099.14338838
0.339	341099.14338838
0.34	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.341	341099.14338838
0.342	341099.14338838
0.343	341099.14338838
0.344	341099.14338838
0.345	341099.14338838
0.346	341099.14338838
0.347	341099.14338838
0.348	341099.14338838
0.349	341099.14338838
0.35	341099.14338838
0.351	341099.14338838
0.352	341099.14338838
0.353	341099.14338838
0.354	341099.14338838
0.355	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.356	341099.14338838
0.357	341099.14338838
0.358	341099.14338838
0.359	341099.14338838
0.36	341099.14338838
0.361	341099.14338838
0.362	341099.14338838
0.363	341099.14338838
0.364	341099.14338838
0.365	341099.14338838
0.366	341099.14338838
0.367	341099.14338838
0.368	341099.14338838
0.369	341099.14338838
0.37	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.371	341099.14338838
0.372	341099.14338838
0.373	341099.14338838
0.374	341099.14338838
0.375	341099.14338838
0.376	341099.14338838
0.377	341099.14338838
0.378	341099.14338838
0.379	341099.14338838
0.38	341099.14338838
0.381	341099.14338838
0.382	341099.14338838
0.383	341099.14338838
0.384	341099.14338838
0.385	341099.14338838



0.386	341099.14338838
0.387	341099.14338838
0.388	341099.14338838
0.389	341099.14338838
0.39	341099.14338838
0.391	341099.14338838
0.392	341099.14338838
0.393	341099.14338838
0.394	341099.14338838
0.395	341099.14338838
0.396	341099.14338838
0.397	341099.14338838
0.398	341099.14338838
0.399	341099.14338838
0.4	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.401	341099.14338838
0.402	341099.14338838
0.403	341099.14338838
0.404	341099.14338838
0.405	341099.14338838
0.406	341099.14338838
0.407	341099.14338838
0.408	341099.14338838
0.409	341099.14338838
0.41	341099.14338838
0.411	341099.14338838
0.412	341099.14338838
0.413	341099.14338838
0.414	341099.14338838
0.415	341099.14338838



0.416	341099.14338838
0.417	341099.14338838
0.418	341099.14338838
0.419	341099.14338838
0.42	341099.14338838
0.421	341099.14338838
0.422	341099.14338838
0.423	341099.14338838
0.424	341099.14338838
0.425	341099.14338838
0.426	341099.14338838
0.427	341099.14338838
0.428	341099.14338838
0.429	341099.14338838
0.43	341099.14338838



0.431	341099.14338838
0.432	341099.14338838
0.433	341099.14338838
0.434	341099.14338838
0.435	341099.14338838
0.436	341099.14338838
0.437	341099.14338838
0.438	341099.14338838
0.439	341099.14338838
0.44	341099.14338838
0.441	341099.14338838
0.442	341099.14338838
0.443	341099.14338838
0.444	341099.14338838
0.445	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.446	341099.14338838
0.447	341099.14338838
0.448	341099.14338838
0.449	341099.14338838
0.45	341099.14338838
0.451	341099.14338838
0.452	341099.14338838
0.453	341099.14338838
0.454	341099.14338838
0.455	341099.14338838
0.456	341099.14338838
0.457	341099.14338838
0.458	341099.14338838
0.459	341099.14338838
0.46	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.461	341099.14338838
0.462	341099.14338838
0.463	341099.14338838
0.464	341099.14338838
0.465	341099.14338838
0.466	341099.14338838
0.467	341099.14338838
0.468	341099.14338838
0.469	341099.14338838
0.47	341099.14338838
0.471	341099.14338838
0.472	341099.14338838
0.473	341099.14338838
0.474	341099.14338838
0.475	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.476	341099.14338838
0.477	341099.14338838
0.478	341099.14338838
0.479	341099.14338838
0.48	341099.14338838
0.481	341099.14338838
0.482	341099.14338838
0.483	341099.14338838
0.484	341099.14338838
0.485	341099.14338838
0.486	341099.14338838
0.487	341099.14338838
0.488	341099.14338838
0.489	341099.14338838
0.49	341099.14338838



0.491	341099.14338838
0.492	341099.14338838
0.493	341099.14338838
0.494	341099.14338838
0.495	341099.14338838
0.496	341099.14338838
0.497	341099.14338838
0.498	341099.14338838
0.499	341099.14338838
0.5	341099.14338838
0.501	341099.14338838
0.502	341099.14338838
0.503	341099.14338838
0.504	341099.14338838
0.505	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.506	341099.14338838
0.507	341099.14338838
0.508	341099.14338838
0.509	341099.14338838
0.51	341099.14338838
0.511	341099.14338838
0.512	341099.14338838
0.513	341099.14338838
0.514	341099.14338838
0.515	341099.14338838
0.516	341099.14338838
0.517	341099.14338838
0.518	341099.14338838
0.519	341099.14338838
0.52	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.521	341099.14338838
0.522	341099.14338838
0.523	341099.14338838
0.524	341099.14338838
0.525	341099.14338838
0.526	341099.14338838
0.527	341099.14338838
0.528	341099.14338838
0.529	341099.14338838
0.53	341099.14338838
0.531	341099.14338838
0.532	341099.14338838
0.533	341099.14338838
0.534	341099.14338838
0.535	341099.14338838



0.536	341099.14338838
0.537	341099.14338838
0.538	341099.14338838
0.539	341099.14338838
0.54	341099.14338838
0.541	341099.14338838
0.542	341099.14338838
0.543	341099.14338838
0.544	341099.14338838
0.545	341099.14338838
0.546	341099.14338838
0.547	341099.14338838
0.548	341099.14338838
0.549	341099.14338838
0.55	341099.14338838



0.551	341099.14338838
0.552	341099.14338838
0.553	341099.14338838
0.554	341099.14338838
0.555	341099.14338838
0.556	341099.14338838
0.557	341099.14338838
0.558	341099.14338838
0.559	341099.14338838
0.56	341099.14338838
0.561	341099.14338838
0.562	341099.14338838
0.563	341099.14338838
0.564	341099.14338838
0.565	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.566	341099.14338838
0.567	341099.14338838
0.568	341099.14338838
0.569	341099.14338838
0.57	341099.14338838
0.571	341099.14338838
0.572	341099.14338838
0.573	341099.14338838
0.574	341099.14338838
0.575	341099.14338838
0.576	341099.14338838
0.577	341099.14338838
0.578	341099.14338838
0.579	341099.14338838
0.58	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.581	341099.14338838
0.582	341099.14338838
0.583	341099.14338838
0.584	341099.14338838
0.585	341099.14338838
0.586	341099.14338838
0.587	341099.14338838
0.588	341099.14338838
0.589	341099.14338838
0.59	341099.14338838
0.591	341099.14338838
0.592	341099.14338838
0.593	341099.14338838
0.594	341099.14338838
0.595	341099.14338838



0.596	341099.14338838
0.597	341099.14338838
0.598	341099.14338838
0.599	341099.14338838
0.6	341099.14338838
0.601	341099.14338838
0.602	341099.14338838
0.603	341099.14338838
0.604	341099.14338838
0.605	341099.14338838
0.606	341099.14338838
0.607	341099.14338838
0.608	341099.14338838
0.609	341099.14338838
0.61	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.611	341099.14338838
0.612	341099.14338838
0.613	341099.14338838
0.614	341099.14338838
0.615	341099.14338838
0.616	341099.14338838
0.617	341099.14338838
0.618	341099.14338838
0.619	341099.14338838
0.62	341099.14338838
0.621	341099.14338838
0.622	341099.14338838
0.623	341099.14338838
0.624	341099.14338838
0.625	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.626	341099.14338838
0.627	341099.14338838
0.628	341099.14338838
0.629	341099.14338838
0.63	341099.14338838
0.631	341099.14338838
0.632	341099.14338838
0.633	341099.14338838
0.634	341099.14338838
0.635	341099.14338838
0.636	341099.14338838
0.637	341099.14338838
0.638	341099.14338838
0.639	341099.14338838
0.64	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.641	341099.14338838
0.642	341099.14338838
0.643	341099.14338838
0.644	341099.14338838
0.645	341099.14338838
0.646	341099.14338838
0.647	341099.14338838
0.648	341099.14338838
0.649	341099.14338838
0.65	341099.14338838
0.651	341099.14338838
0.652	341099.14338838
0.653	341099.14338838
0.654	341099.14338838
0.655	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.656	341099.14338838
0.657	341099.14338838
0.658	341099.14338838
0.659	341099.14338838
0.66	341099.14338838
0.661	341099.14338838
0.662	341099.14338838
0.663	341099.14338838
0.664	341099.14338838
0.665	341099.14338838
0.666	341099.14338838
0.667	341099.14338838
0.668	341099.14338838
0.669	341099.14338838
0.67	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.671	341099.14338838
0.672	341099.14338838
0.673	341099.14338838
0.674	341099.14338838
0.675	341099.14338838
0.676	341099.14338838
0.677	341099.14338838
0.678	341099.14338838
0.679	341099.14338838
0.68	341099.14338838
0.681	341099.14338838
0.682	341099.14338838
0.683	341099.14338838
0.684	341099.14338838
0.685	341099.14338838



0.686	341099.14338838
0.687	341099.14338838
0.688	341099.14338838
0.689	341099.14338838
0.69	341099.14338838
0.691	341099.14338838
0.692	341099.14338838
0.693	341099.14338838
0.694	341099.14338838
0.695	341099.14338838
0.696	341099.14338838
0.697	341099.14338838
0.698	341099.14338838
0.699	341099.14338838
0.7	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.701	341099.14338838
0.702	341099.14338838
0.703	341099.14338838
0.704	341099.14338838
0.705	341099.14338838
0.706	341099.14338838
0.707	341099.14338838
0.708	341099.14338838
0.709	341099.14338838
0.71	341099.14338838
0.711	341099.14338838
0.712	341099.14338838
0.713	341099.14338838
0.714	341099.14338838
0.715	341099.14338838



0.716	341099.14338838
0.717	341099.14338838
0.718	341099.14338838
0.719	341099.14338838
0.72	341099.14338838
0.721	341099.14338838
0.722	341099.14338838
0.723	341099.14338838
0.724	341099.14338838
0.725	341099.14338838
0.726	341099.14338838
0.727	341099.14338838
0.728	341099.14338838
0.729	341099.14338838
0.73	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.731	341099.14338838
0.732	341099.14338838
0.733	341099.14338838
0.734	341099.14338838
0.735	341099.14338838
0.736	341099.14338838
0.737	341099.14338838
0.738	341099.14338838
0.739	341099.14338838
0.74	341099.14338838
0.741	341099.14338838
0.742	341099.14338838
0.743	341099.14338838
0.744	341099.14338838
0.745	341099.14338838



0.746	341099.14338838
0.747	341099.14338838
0.748	341099.14338838
0.749	341099.14338838
0.75	341099.14338838
0.751	341099.14338838
0.752	341099.14338838
0.753	341099.14338838
0.754	341099.14338838
0.755	341099.14338838
0.756	341099.14338838
0.757	341099.14338838
0.758	341099.14338838
0.759	341099.14338838
0.76	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.761	341099.14338838
0.762	341099.14338838
0.763	341099.14338838
0.764	341099.14338838
0.765	341099.14338838
0.766	341099.14338838
0.767	341099.14338838
0.768	341099.14338838
0.769	341099.14338838
0.77	341099.14338838
0.771	341099.14338838
0.772	341099.14338838
0.773	341099.14338838
0.774	341099.14338838
0.775	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.776	341099.14338838
0.777	341099.14338838
0.778	341099.14338838
0.779	341099.14338838
0.78	341099.14338838
0.781	341099.14338838
0.782	341099.14338838
0.783	341099.14338838
0.784	341099.14338838
0.785	341099.14338838
0.786	341099.14338838
0.787	341099.14338838
0.788	341099.14338838
0.789	341099.14338838
0.79	341099.14338838



0.791	341099.14338838
0.792	341099.14338838
0.793	341099.14338838
0.794	341099.14338838
0.795	341099.14338838
0.796	341099.14338838
0.797	341099.14338838
0.798	341099.14338838
0.799	341099.14338838
0.8	341099.14338838
0.801	341099.14338838
0.802	341099.14338838
0.803	341099.14338838
0.804	341099.14338838
0.805	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.806	341099.14338838
0.807	341099.14338838
0.808	341099.14338838
0.809	341099.14338838
0.81	341099.14338838
0.811	341099.14338838
0.812	341099.14338838
0.813	341099.14338838
0.814	341099.14338838
0.815	341099.14338838
0.816	341099.14338838
0.817	341099.14338838
0.818	341099.14338838
0.819	341099.14338838
0.82	341099.14338838



0.821	341099.14338838
0.822	341099.14338838
0.823	341099.14338838
0.824	341099.14338838
0.825	341099.14338838
0.826	341099.14338838
0.827	341099.14338838
0.828	341099.14338838
0.829	341099.14338838
0.83	341099.14338838
0.831	341099.14338838
0.832	341099.14338838
0.833	341099.14338838
0.834	341099.14338838
0.835	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.836	341099.14338838
0.837	341099.14338838
0.838	341099.14338838
0.839	341099.14338838
0.84	341099.14338838
0.841	341099.14338838
0.842	341099.14338838
0.843	341099.14338838
0.844	341099.14338838
0.845	341099.14338838
0.846	341099.14338838
0.847	341099.14338838
0.848	341099.14338838
0.849	341099.14338838
0.85	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.851	341099.14338838
0.852	341099.14338838
0.853	341099.14338838
0.854	341099.14338838
0.855	341099.14338838
0.856	341099.14338838
0.857	341099.14338838
0.858	341099.14338838
0.859	341099.14338838
0.86	341099.14338838
0.861	341099.14338838
0.862	341099.14338838
0.863	341099.14338838
0.864	341099.14338838
0.865	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.866	341099.14338838
0.867	341099.14338838
0.868	341099.14338838
0.869	341099.14338838
0.87	341099.14338838
0.871	341099.14338838
0.872	341099.14338838
0.873	341099.14338838
0.874	341099.14338838
0.875	341099.14338838
0.876	341099.14338838
0.877	341099.14338838
0.878	341099.14338838
0.879	341099.14338838
0.88	341099.14338838



0.881	341099.14338838
0.882	341099.14338838
0.883	341099.14338838
0.884	341099.14338838
0.885	341099.14338838
0.886	341099.14338838
0.887	341099.14338838
0.888	341099.14338838
0.889	341099.14338838
0.89	341099.14338838
0.891	341099.14338838
0.892	341099.14338838
0.893	341099.14338838
0.894	341099.14338838
0.895	341099.14338838



0.896	341099.14338838
0.897	341099.14338838
0.898	341099.14338838
0.899	341099.14338838
0.9	341099.14338838
0.901	341099.14338838
0.902	341099.14338838
0.903	341099.14338838
0.904	341099.14338838
0.905	341099.14338838
0.906	341099.14338838
0.907	341099.14338838
0.908	341099.14338838
0.909	341099.14338838
0.91	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.911	341099.14338838
0.912	341099.14338838
0.913	341099.14338838
0.914	341099.14338838
0.915	341099.14338838
0.916	341099.14338838
0.917	341099.14338838
0.918	341099.14338838
0.919	341099.14338838
0.92	341099.14338838
0.921	341099.14338838
0.922	341099.14338838
0.923	341099.14338838
0.924	341099.14338838
0.925	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.926	341099.14338838
0.927	341099.14338838
0.928	341099.14338838
0.929	341099.14338838
0.93	341099.14338838
0.931	341099.14338838
0.932	341099.14338838
0.933	341099.14338838
0.934	341099.14338838
0.935	341099.14338838
0.936	341099.14338838
0.937	341099.14338838
0.938	341099.14338838
0.939	341099.14338838
0.94	341099.14338838



0.941	341099.14338838
0.942	341099.14338838
0.943	341099.14338838
0.944	341099.14338838
0.945	341099.14338838
0.946	341099.14338838
0.947	341099.14338838
0.948	341099.14338838
0.949	341099.14338838
0.95	341099.14338838
0.951	341099.14338838
0.952	341099.14338838
0.953	341099.14338838
0.954	341099.14338838
0.955	341099.14338838



0.956	341099.14338838
0.957	341099.14338838
0.958	341099.14338838
0.959	341099.14338838
0.96	341099.14338838
0.961	341099.14338838
0.962	341099.14338838
0.963	341099.14338838
0.964	341099.14338838
0.965	341099.14338838
0.966	341099.14338838
0.967	341099.14338838
0.968	341099.14338838
0.969	341099.14338838
0.97	341099.14338838



Urban Transportation Systems Engineering Lab

by IIT Bombay - www.iitb.ac.in

0.971	341099.14338838
0.972	341099.14338838
0.973	341099.14338838
0.974	341099.14338838
0.975	341099.14338838
0.976	341099.14338838
0.977	341099.14338838
0.978	341099.14338838
0.979	341099.14338838
0.98	341099.14338838
0.981	341099.14338838
0.982	341099.14338838
0.983	341099.14338838
0.984	341099.14338838
0.985	341099.14338838



0.986	341099.14338838
0.987	341099.14338838
0.988	341099.14338838
0.989	341099.14338838
0.99	341099.14338838
0.991	341099.14338838
0.992	341099.14338838
0.993	341099.14338838
0.994	341099.14338838
0.995	341099.14338838
0.996	341099.14338838
0.997	341099.14338838
0.998	341099.14338838
0.999	341099.14338838