Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VI SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, MAY/JUNE 2022

SUBJECT: **URBAN TRANSPORT PLANNING [CIE 4068]**

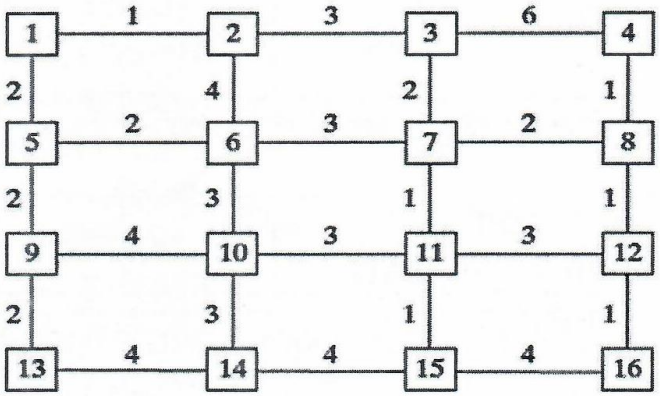
REVISED CREDIT SYSTEM

(_ / / 2022)

Time: 3 Hours Max. Marks: **50**

Instructions to Candidates:

- Answer ALL the questions
- Missing data may be suitably assumed

Q.No		Marks	CO
1A.	Determine the minimum time paths from node 1 to all other nodes.  	4	4
1B.	A pair of zones having a volume of 1200 trips between each other is connected by the two routes whose characteristics are shown in table below. Calculate the volume of vehicles in each route and travel time by capacity restraint method up to first iteration. **Route No.** | **No. of Lanes** | **Speed limit (mph)** | **Length (mile)** | **Critical Volume** | **Critica Travel Time (min)** | **Travel Time with no volume (min/mile)** 1 | 1 | 30 | 3 | 600 | 3 | 2.5 2 | 1 | 30 | 4 | 100 | 2 | 1.5	4	4
1C.	Describe traffic assignment with a neat sketch and list out its principles	2	4
2A.	Relative Travel time (RTT) and corresponding percentage of transit users for a city are given below. Plot the diversion curve using logarithmic transformation technique and estimate the percentage of transit users if the RTT is 0.5 and 1.5 RTT | % of Transit Users 1 | 58.87 2 | 39.37 3 | 27.96 4 | 19.86 5 | 13.58	5	4

<table>
<tr><td>2B.</td><td>Describe Logit model with relevant formula.</td><td>2</td><td>4</td></tr>
<tr><td>2C.</td><td>Draw the flow diagram showing the sequence of activities in the Lowry model.</td><td>3</td><td>4</td></tr>
<tr><td>3A.</td><td>Differentiate between the terms Origin/Destination and Production/Attraction and list out the applications of O-D data.</td><td>4</td><td>2</td></tr>
<tr><td>3B.</td><td>List out the different types of transportation survey.</td><td>3</td><td>1</td></tr>
<tr><td>3C.</td><td>Describe the points to be kept in view while dividing the study area into zones.</td><td>3</td><td>1</td></tr>
<tr><td>4A.</td><td>Explain the inventory of land use and economic activity.</td><td>2</td><td>2</td></tr>
<tr><td>4B.</td><td>Describe Trip Distribution stage in Transport Modelling.</td><td>3</td><td>2</td></tr>
<tr><td>4C.</td><td>For the following data distribute the future trips among the zones by Furness Method up to first iteration.
<table>
<tr><td>O\D</td><td>1</td><td>2</td><td>3</td><td>4</td><td>Total Present trips</td><td>Estimated future trips (total)</td></tr>
<tr><td>1</td><td>8</td><td>3</td><td>16</td><td>15</td><td>42</td><td>147</td></tr>
<tr><td>2</td><td>6</td><td>9</td><td>8</td><td>5</td><td>28</td><td>42</td></tr>
<tr><td>3</td><td>10</td><td>8</td><td>3</td><td>8</td><td>29</td><td>32</td></tr>
<tr><td>4</td><td>2</td><td>4</td><td>7</td><td>12</td><td>25</td><td>30</td></tr>
<tr><td>Total Present trips</td><td>26</td><td>24</td><td>34</td><td>40</td><td>124</td><td></td></tr>
<tr><td>Estimated future Trips (total)</td><td>39</td><td>24</td><td>68</td><td>120</td><td></td><td>251</td></tr>
</table></td><td>5</td><td>3,4</td></tr>
<tr><td>5A.</td><td>A self-contained town consists of four residential areas A,B,C and D and two industrial estates X and Y. Generation equations show that, for the design year in question, the trips from home to work generated by each residential area per 24 hour day are as follows
<table>
<tr><td>A</td><td>1000</td></tr>
<tr><td>B</td><td>2250</td></tr>
<tr><td>C</td><td>1750</td></tr>
<tr><td>D</td><td>3200</td></tr>
</table>
There are 3700 jobs in industrial estate X and 4500 in industrial estate Y. It is known that the attraction between zones is inversely proportional to the square of the journey times between zones. The journey time in minutes from home to work are:
<table>
<tr><td>Zones</td><td>X</td><td>Y</td></tr>
<tr><td>A</td><td>15</td><td>20</td></tr>
<tr><td>B</td><td>15</td><td>10</td></tr>
<tr><td>C</td><td>10</td><td>10</td></tr>
<tr><td>D</td><td>15</td><td>20</td></tr>
</table>
Calculate and tabulate the inter-zonal trips for journeys from home to work.</td><td>5</td><td>5</td></tr>
<tr><td>5B.</td><td>Explain the factors considered for the selection of Land-use Transport model</td><td>3</td><td>1</td></tr>
<tr><td>5C.</td><td>Explain multiple linear regression analysis using relevant formula.</td><td>2</td><td>1</td></tr>
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