Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH (CIVIL) END SEMESTER EXAMINATIONS DECEMBER 2020

SUBJECT: URBAN TRANSPORTATION PLANNING [CIE 4028]

Date of Exam: Time of Exam: Max. Marks: **50**

Instructions to Candidates:

- Answer ALL the questions & missing data may be suitably assumed

1A. What is Urban Transportation Planning? With a neat sketch explain the system approach to transportation planning. **5**

1B. What is parking study? Explain the types and mention its applications. **5**

2A. What is trip generation? Explain the factors influencing the trip generation. **5**

2B. What are the assumptions and disadvantages of Category Analysis? Explain. **5**

3A. The distribution of present trips among 4 zones A, B, C and D are given in the O-D matrix below. Distribute the future trips among the zones by Fratar Method. **5**

O\D	A	B	C	D
A	-	10	12	18
B	10	-	14	14
C	12	14	-	6
D	18	14	6	-
Present Totals	**40**	**38**	**32**	**38**
Estimated future totals	**80**	**114**	**48**	**38**

3B. The number of trips produced in and attracted to the three zones 1,2 and 3 are tabulated as: **5**

Zone	1	2	3	Total
Trips Produced (Pi)	14	33	28	75
Trips Attracted (Aj)	33	28	14	75

The order of closeness matrix and the Zonal L factors are given below

O\D	1	2	3
1	1	2	3
2	2	1	3
3	2	3	1

Zone	L Factors
1	0.04
2	0.02
3	0.04

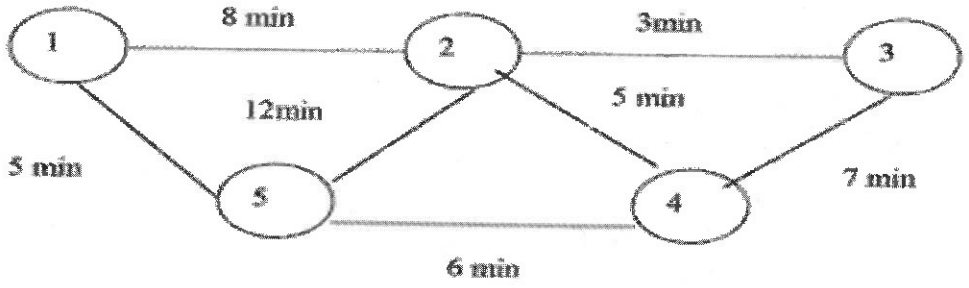
Distribute the trips between the zones up to second iteration using intervening opportunities model.

4A. Assign the vehicle trips shown in the following O-D trip table to the network, using the all-or-nothing assignment technique. To summarize your results, list all of the links in **6**

the network and their corresponding traffic volume after loading and also draw the minimum path tree showing the traffic volume in each link.

From/to	Trips between zones				
	1	2	3	4	5
1		100	100	200	150
2	400		200	100	500
3	200	100		100	150
4	250	150	300		400
5	200	100	50	350	

Highway Network:



4B.	A freeway section 10 miles long has a free-flow speed of 60 mph. Q_{max} = 2000 veh/hr, Q = 1000 veh/hr, τ = 0.1, α = 0.474, and β = 4, and T_0 = 10min. Apply the (a) Davidson's and (b) BPR's method to find travel time at traffic flow Q (T_Q).	**2**
4C.	Mention are the various characteristics that influence mode choice.	**2**
5A	The travel characteristics between two zones is given in the table below. Find the probability of using Auto and Transit mode by Logit Model.	**3**

Variable	Auto	Transit
a_k	-0.46	-0.07
t_1	20	30
t_2	8	6
c	320	100

5B.	What are multiple route and capacity restraint assignment techniques?	**2**
5C.	Explain Lowry Derivative land use model.	**5**