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)

Max. Marks: **50**

Time: 3 Hours

Instructions to Candidates:

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

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1A.	From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the table below. Find the accumulation, total parking load, and average occupancy of the parking lotTime51015202530354045505560In324578246432Out242432724135						4	1							
1B.	Explain systems approach to transport planning with a neat sketch										Ζ.	1			
	Distribute the future trips among the zones shown in table below by Frator method up to first iteration.											nethod			
	O\D			Α	B C D										
	A			-	10		12	18							
1C.	В			10	-		14	14						4	1,3
	C			12	14	1	-	6	_						
	D Present Totals			10	38		32	-	_						
	Future Totals			80	114		48	38	-						
2A.	The number of trips produced in and attracted to the three zones 1,2 and 3 are tabulated as:														
	Zone				1		2	3	Tot	Total					
	Trip Productions				140		30	280	75	750					
	Trip Attractions				300	2	70	180	75)				4	1,3
	The travel time between			en zor	nes in	minu	tes is g	given i	n table	belo	w:				
	Zone	1 5	$\frac{2}{2}$		$\frac{3}{3}$										
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		6		6										
	3	3 3 6			5										
	Travel time versus friction factor values are as shown in table below:														

	Time (minutes)12	2 3 4	5 6 7	8						
	Friction Factor 82 5									
	Determine the number of trij									
	During a household travel di									
	points A and B were distributed									
	in-vehicle travel time for these three modes was 35 min, 25 min and 55 min respectively. The average access, waiting and egress time for transit users was 7.5									
	min, 8 min and 8.5 min respe	4	4							
	Rs.20 and the fuel cost w									
2B.	respectively. Also the parkin									
	was 1.8 and 1.2. The avera									
	parking was 3.2 min and 4.5	eparately for car and								
	two wheeler:									
	1. Relative Travel Time (RTT 2. Polotive Travel Cost (PTC)									
	3 Relative Travel Time (RTT									
20										
20.	Explain the Capacity Restrain									
	Assign the vehicle trips shown in the following 0-D trip table to the network									
	using the all-or-nothing assig									
	of the links in the network and	d their correspon	nding traffic volu	ime after loading						
	Origin-Destination Trip Ta	Die:								
	E. A. I.I.	Trips between	Zones	_						
	From/to 1	100 100	200 150	-						
	2 400	- 200	100 500	_						
24	3 200	100 -	100 150		4	2				
JA.	4 250	150 300	- 400	_		2				
	3 200	100 50	350 -							
	Highway Network:									
	8 min	3mi	in							
		2 5 min	3)						
	12min									
	5 min 5	4	7 min							
		E min								
	Determine the minimum time	e paths from no	de 1 to all other	nodes. The values in						
	the bracket are the travel time	e between the zo	nes.							
	23 (4) 23 (3) 24									
	22		20							
	(2) (2	(2)	(3)							
	(5)	(1)	(4)							
3B.	(1) 18 19	20	21		3	1				
	(2) (2)	(2)								
	(3) (2	(3)								
	15 (2) 15 (2) 17	7 (3) 1	(5)							
	(2) 10 (2) 17									
	(1) (3))								
	11 12 12 12 12 14									
	(2) 12 (2) 13	(5)								

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3C.Explain Diversion Curves of Traffic Assignment. List out the variables considered for the plotting of diversion curves.254A.A freeway section 10 miles long has a free-flow speed of 60 mph. Qmax = 2000 veh/hr, Q = 1000 veh/hr, -r = 0.1, a = 0.474, and f3 = 4, and T0 = 10min. Apply the (a) Davidson's and (b) BPR's method to find travel time at traffic flow Q.44.54B.List out the assumptions made in multiple linear regression analysis.2224C.What is modal split? What is the importance of doing modal split?444Travel characteristics between two zones is given in table below:445A.Image: Constraint of the trips will be below:445A.Image: Constraint of the trips will be by bike? Assume: 1. A bike trip is similar to a transit trip 2. A bike trip takes 5 minutes more than a transit trip but with no waiting time. 3. After the initial purchase of the bike, the trip is "free"445B.Image: Constraint of the trips will be by bike? Assume: 1. A bike trip is are regression model for estimating the trips generated from the zone. If the population in particular zone increase to 40,000, predict the expected trip generated from the zone.445B.Image: Constraint of the trips of the trip is generated from the trop a linear regression for the trips of the trip second by the second from the zone.425B.Image: Constraint of the trips of the trips generated from the trip generated from the zone.4425B.Image: Constraint of the trips generated from the to a sing trips generated from the tone that zone.									
4A.A freeway section 10 miles long has a free-flow speed of 60 mph, Qmax = 2000 weh/hr, Q = 1000 veh/hr, $\tau = 0.1$, $a = 0.474$, and $f3 = 4$, and $T0 = 10min. Applythe (a) Davidson's and (b) BR's method to find travel time at traffic flow Q.44.54B.List out the assumptions made in multiple linear regression analysis.224C.What is modal split? What is the importance of doing modal split?445A.Interpret Characteristics between two zones is given in table below:44Travel characteristics between two zones is given in table below:4475.A.Interpret Characteristics between two zones is given in table below:44The city decides to spend money to create and improve bike trails so that biking becomes a viable option, what percent of the trips will be by bike?Assume: 1. A bike trip is similar to a transit trip 2. A bike trip takes 5 minutes more than a transit trip but with no waiting time. 3. After the initial purchase of the bike, the trip is "free"4458.Traffic2Population2Total fragmentationa strain trip 2. A bike trip takes 54258.Impound the zone3Total fragmentation34258.Impound the zone3Impound trips44258.Impound the disadvantages of category analysis.22$	3C.	Explain for the p	2	5					
48. List out the assumptions made in multiple linear regression analysis. 2 2 4C. What is modal split? What is the importance of doing modal split? 4 4 5A. Travel characteristics between two zones is given in table below: 4 4 5A. Importance of doing modal split? 4 4 5A. Importance of specific doing model for estimating the trips generated from the zone. 4 4 5B. Importance of the biose doing formal tabl	4A.	A freew veh/hr, the (a) I	A freeway section 10 miles long has a free-flow speed of 60 mph. $Qmax = 2000$ veh/hr, $Q = 1000$ veh/hr, $-r = 0.1$, $a = 0.474$, and $f3 = 4$, and $T0 = 10$ min. Apply the (a) Davidson's and (b) BPR's method to find travel time at traffic flow Q.						
4C.What is modal split? What is the importance of doing modal split?44Travel characteristics between two zones is given in table below:5A. $\boxed{12120}$ $\boxed{30}$ $\boxed{1}{2}$ $\boxed{20}$ $\boxed{30}$ $\boxed{1}{2}$ The city decides to spend money to create and improve bike trails so that biking becomes a viable option, what percent of the trips will be by bike?44Assume: 1. A bike trip is similar to a transit trip 2. A bike trip takes 5 minutes more than a transit trip but with no waiting time. 3. After the initial purchase of the bike, the trip is "free"The following information was obtained from a transportation survey of a town. Develop a linear regression model for estimating the trips generated from the zone. If the population in particular zone increase to 40,000, predict the expected trip generation from that zone.42Traffic Population in particular zone increase to 40,000, predict the expected trip generated from that zone.Traffic Population in particular zone increase to 40,000, predict the expected trip generated from that zone.SB. $\boxed{7 20 9}$ 425C.List out the disadvantages of category analysis.22	4B.	List out	List out the assumptions made in multiple linear regression analysis.						
Travel characteristics between two zones is given in table below:aniableAutoTransit a_k -0.46-0.07 $\frac{1}{1}$ 2030 $\frac{1}{2}$ 86 c 320100The city decides to spend money to create and improve bike trails so that biking becomes a viable option, what percent of the trips will be by bike?Assume: 1. A bike trip is similar to a transit trip 2. A bike trip takes 5 minutes more than a transit urip but with no waiting time. 3. After the initial purchase of the bike, the trip is "free"The following information was obtained from a transportation survey of a town. Develop a linear regression model for estimating the trips generated from the zone. If the population in particular zone increase to 40,000, predict the expected trip generated (Hundreds)1261262281133311744335226309825135C.List out the disadvantages of category analysis.22	4C.	What is	4	4					
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5C.List out the disadvantages of category analysis.22	5B.	The fol Develop zone. If trip gen Traffic zone 1 2 3 4 5 6 7 8	lowing inform a linear registry of a linear regist	nation was or gression motion in particu- that zone. Total trips generated (Hundreds) 12 11 17 15 12 15 9 13	bbtained from a transportation survey of a town. del for estimating the trips generated from the llar zone increase to 40,000, predict the expected	4	2		
	5C.	List out	2	2					