

MANIPAL INSTITUTE OF TECHNOLOGY VII SEMESTER B.TECH (CIVIL ENGINEERING) END SEMESTER EXAMINATION, NOV 2022 URBAN MASS TRANSPORT SYSTEM (CIE 4067)

(30 –11 - 2022)

TIME: 3 HRS.

MAX. MARKS: 50

Note: 1. Answer all questions.

2. Any missing data may be suitably assumed.

Q.	QUESTION	MARKS	CO
NO			
1A	A bus system needs to be setup between two places A and B, which are 13.5 km	5	2
	apart. The operating time is 40 minutes. It has been estimated that the peak hour		
	demand is 600passengers/hour and 50 seater buses are available, which can		
	safely accommodate 20 standees. Design the basic system and determine the		
	fleet size, assuming that the policy headway is 30 min and the minimum		
	terminal time is 7.5min, which may be revised if necessary.		
1B	Define transit centers and facilities available at such places.	2	5
1C	Urban Transportation System plays an important role in a society and city's economy.	3	1
	Justify this statement.		
2A	Find the maximum capacity per hour of BRT and metro for the frequency of 60	4	2
	trips per hour in any corridor. Assume the seat capacity of bus as 50 and metro		
	with 4 coaches each having 75 capacity. Consider reliability as 100% and load		
	factor as 1.1 for both Bus and Metro systems.		
2B	Define and list advantages and disadvantages of trunk lines with feeders as	3	3
	compared to trunk lines with branches.		
2C	What are the different approaches in predicting route ridership and discuss in	3	3
	detail about non-committal and stated preference survey.		
3A	A three-car light rail transit operates in city street through signalized	4	2
	intersections. The $g/c = 0.45$ and the passenger dwell time is 90seconds. How		
	many persons can the train carry?(Assume 170 passengers per car; train		
	clearance time is 50 seconds)		
3B	Describe different characteristics of Busway stations.	3	5
3 C	Define Rostering and discuss in detail the different types of rostering.	3	4
4 A	Find the network size and its form for the following network. Also, determine	4	3
	its topology indicators. (length of each segment is 1km)		

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	Line 1		
	Line 2		
4B	Define Run-cutting and list out the information which is required for a scheduler to prepare Run-cutting.	3	4
4 C	What are the characteristics of Heavy rail stations?	3	5
5A	Prepare the Master Schedule for the evening peak hour with the help of the given data for the network shown below: Headway = 30 minutes Peak Service Hours: 6:00 am – 10:30 and 16:00 – 20:30 Round Trip Time = 72 minutes Other routes converge on the western terminal at :04 and :34 past the hour Layover time for 30 minute headway = 18 minutes (10 minutes at eastern terminal and 8 minutes at western terminal) 36 minutes running time 10 Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Cornanche/ Big Sky) CBS	4	4
5B	Explain the service requirements for transit scheduling.	3	4
5 C	with the help of a neat sketch, describe the different types of bus layouts.	5	5
