BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2025)

CLASS: B.TECH **SEMESTER : VI**
BRANCH: CIVIL ENINEERING **SESSION : SP/2025**

SUBJECT: CE438 TRAFFIC ENGINEERING AND MANAGEMENT

TIME: 02 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Discuss the difference between time headway and distance headway.	[2]	1	2
Q.1(b)	The length of a road stretch used for conducting the moving observer test is 0.5 km and the speed with which the test vehicle moved is 20 km/hr. The data from four moving observer test methods are shown in the table. Column 1 gives the sample number, column 2 gives the number of vehicles moving against the stream, column 3 gives the number of vehicles that had overtaken the test vehicle, and last column gives the number of vehicles overtaken by the test vehicle. Find the three fundamental stream parameters for each set of data.	[3]	1	3

Sample No. (1)	Ma (2)	Mo (3)	Mp (4)
1	107	10	74
2	113	25	41
3	30	15	5
4	79	19	9

Q.2(a)	The results of a speed study is given in the form of frequency distribution table. Find the time mean speed and space mean speed.	[2]	1	2

Speed range (m/s)	Frequency
1-4	2
5-8	3
9-12	5
13-16	6

Q.2(b)	Discuss about “Flow-density curve” of fundamental diagrams of traffic flow.	[3]	1	3
Q.3(a)	Explain the differences between mandatory lane change and discretionary lane change.	[2]	2	2
Q.3(b)	Discuss “Gap acceptance” process with neat sketch.	[3]	2	3
Q.4(a)	Explain cooperative merging.	[2]	2	2
Q.4(b)	In a two lane, one way stream of 1500 veh./hour with 590 vehicles in lane A and the remaining vehicles in lane B. 11% of vehicles in lane A have gap less than 1 sec. and 21% of the vehicles in lane A have gaps less than 2 sec. Compute the time during which vehicles in lane B may not change to lane A in 1 hour. Assume driver requires one second ahead and behind in making a lane change	[3]	2	3
Q.5(a)	Define “Capacity” of a transport facility.	[2]	3	2
Q.5(b)	Discuss about “Level of service” criteria of a transport facility.	[3]	3	3

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