BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : VII**
BRANCH: CIVIL ENGINEERING **SESSION : MO/2025**

SUBJECT: CE437 TRANSPORTATION PLANNING

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Discuss the need of Intelligent Transport Systems (ITS) for the future transport solutions in urban areas.	[5]	1	2
Q.1(b)	Explain the impact of urban activity pattern to the trip length and mode choice.	[5]	1	2
Q.2(a)	Explain the spatial interaction modelling for the analysis of goods movement.	[5]	2	2
Q.2(b)	Discuss the characteristics of commodity transportation.	[5]	2	2
Q.3(a)	The productions from zone 1, 2 and 3 are 98,106 and 122. Attractions to zone 1,2 and 3 are 102,118 and 106. The function $f(c_{ij}) = 1/c_{ij}^2$. The cost matrix is	[5]	3	3

$$\begin{matrix} 1.0 & 1.2 & 1.8 \\ 1.2 & 1.0 & 1.5 \\ 1.8 & 1.5 & 1 \end{matrix}$$

Compute the trip matrix using doubly constraint gravity model.

Q.3(b)	The number of trips from zone (i) to zone (j) is 5000, and two modes are available which has the characteristics given in Table. Compute the trips made by mode bus, and the fare that is collected from the mode bus. If the fare of the bus is reduced to 6, then find the fare collected.	[5]	3	3

	t_{ij}^u	t_{ij}^w	t_{ij}^t	f_{ij}	φ_j
Car	20	-	18	4	-
Bus	30	5	3	9	-
a_i	0.03	0.04	0.06	0.1	0.1

where t_{ij}^u is the in-vehicle travel time between i and j, t_{ij}^w is the walking time to and from stops, t_{ij}^t is the waiting time at stops, F_{ij} is the fare charged to travel between i and j, ϕ_j is the parking cost

Q.4(a)	Explain the importance of home interview survey.	[5]	4	2
Q.4(b)	Discuss about public transportation survey with sample questionnaire design.	[5]	4	3
Q.5(a)	Explain the importance of Lowry land use model.	[5]	5	2
Q.5(b)	Discuss about the five stage land use transport model.	[5]	5	2

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