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

CLASS: MUP **SEMESTER : I**
BRANCH: Architecture and Planning **SESSION : MO/2025**

SUBJECT: AR610 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)	What exactly do you mean by "transportation," and how do we approach transportation planning projects?	[5]	1	2
Q.1(b)	Define the three parameters of traffic flow. State the relationship between speed, flow, and density of traffic. (illustrate with sketches/diagrams)	[5]	1	1
Q.2(a)	What is a cordon line? State the considerations while identifying cordon line for a study. What do you understand by zoning?	[5]	1	2
Q.2(b)	A 10-minute count of vehicles bound for Kolkata at NH-2 was conducted at a midsection. 75 cars, 60 trucks, 10 buses, and 10 motorcycles were recorded. What is the type and value of the flow here? (Use the PCU values for calculation)	[5]	2	3
Q.3(a)	Draw a hypothetical network and mark all the key elements used in transportation study.	[5]	3	2
Q.3(b)	With respect to the diagram then Explain the Traditional Four-Step Travel Demand Forecasting Process	[5]	3	3
Q.4(a)	Draw a standard roundabout at a four-legged intersection with two-lane, two-way approaches, and mark all the elements required for capacity calculation of the roundabout. Explain the steps to calculate the capacity. OR Explain a shockwave, its types and state the formula to calculate the speed of a shockwave.	[10]	3	5
Q.5	Two proposals for a flyover project have been submitted for review: Proposal A: Project lifespan of 15 years, with an annual maintenance cost of INR 120,000/-. Proposal B: Project lifespan of 12 years, with an annual maintenance cost of INR 90,000/-. The rate of interest for both proposals is 9% per annum. Analyze the total cash flow for each proposal over their respective lifetimes, calculating the present value of each, and recommend the proposal with the lower cash flow requirement. OR Upgradation of a two-lane state highway to a six-lane highway is planned to be done 5 years from now which will cost Rs.50,00,000. What should be the series of uniform annual payments that need to be set apart to accumulate this amount if the interest rate is 8% per annum?	[10]	3	5

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