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Paper Code: CE-023	Roll No.									

B.Tech.
(SEM VI) EVEN SEMESTER EXAMINATION, 2015-16
TRANSPORT SYSTEM & PLANNING

[Time: 2 hrs.] **[Max. Marks: 50]**

Note:-Attempt All questions.

1. Attempt any four parts of the following:- **[3.5x4=14]**

(a) Enumerate the various fields of transportation and Transportation System? Discuss the characteristics of Transportation System.

(b) How does the development of transportation facility affects the social and economic sector of a country?

(c) What are positive and negative aspects of growth of transportation system? Discuss them with relevant data.

(d) Explain role of transportation in society and Indian economics

(e) Discuss emerging technologies in transportation systems

(f) Explain transportation planning process.

2. Attempt any two parts of the following:- **[6x2=12]**

(a) Sketch the three fundamental diagrams of traffic flow. Derive the relation between maximum flow, jam density and free flow speed. Calculate the time mean speed and the space mean speed of the following observation.

Speed Range (m/sec)	Volume (veh/hr)
10-12	12
12-14	18
14-16	24
16-18	20
18-20	14

(b) What are various types of Intermediate Public Transport modes? Under what circumstances these are best suited for a metropolitan city. What are advantageous of IPTs over MRTS?

(c) For the given matrix find out trip distribution using Average Fratar method.(Try two iterations)

O/D	1	2	3	Pi	Ei =Pi/pi
1	60	100	200	360	
2	100	20	300	1260	
3	200	300	20	3120	
Aj	360	1260	3120		

3. Attempt any two parts of the following:- **[6x2=12]**

(a) Discuss purpose and general principle of trip assignment. Using user equilibrium assignment verify that flows are at user equilibrium for the given problem: There are two nodes 1 & 2 .travel time function for two routes X_1 and X_2 . given that $t_1 = 12+3x_1$, $t_2 = 10+5x_2$ and also $x_1+x_2 = 12$

(b) In an area number of trips from zone i to j are 8000 and two modal split models are available which has characteristics given below. Compute the trips made by bus and also find the fare collected by this mode. If fare of bus is restricted to 6 then find fare collected by each mode.

	tij^v	tij^w	tij^t	fij	Øj
car	20	-	18	4	-
bus	30	5	3	9	-
a_j	0.03	0.04	0.06	0.1	0.1

(c) Write down assumptions, advantageous and disadvantageous of aggregated and disaggregated analysis models in trip generation.

4. Attempt any two parts of the following:- **[6x2=12]**

(a) How the transportation does affected by land uses? Describe the factors affecting transport land use relationship and also different land use models.

(b) What is purpose of project economic evaluation? How the total cost of a project is evaluated? On what factors road user cost depends?

(c) A proposed new bus route is expected to require 8 new buses and to operate a total of 66000 vehicle-km per year and 29000 vehicle –hrs per year . Buses cost Rs 25 lacs each and have a 10 year life ,and salvage value after 10 years of Rs 2.5 lacs each. Operating cost include labor cost, at Rs 500 /veh-hr, maintenance cost at Rs 20/ veh-hr and cost of fuel ,oil, tires etc at Rs 15/veh-km . Calculate the life cycle cost(present value) of adding this route and operating it for 10 years assuming an annual interest rate of 7.5 %