

B. Tech. (CIVIL) Semester VIII, Regular Theory Examination – May / June : 2012

## C- 805: Transportation Engineering-II

Max. Time: 3 Hours

Max. Marks: 70

Exam. No. of the candidate: \_\_\_\_\_

Instructions: - (1) Answer to the two sections must be written in separate answer books.  
 (2) Figures to the right indicate full marks.  
 (3) Assume suitable data if required.

### Section – I

- 1 (A) What is Transportation Engineering? Explain the different modes of transportation. (6)  
 (B) Explain the levels of urban transport planning? (6)

OR

- 1 (A) Explain the scope and functions of transport engineering. (6)  
 (B) Explain the components of comprehensive planning of transportation system. (6)  
 2 (A) What are the objectives and requirements of pavements? Explain difference between bitumen and tar. (6)  
 (B) What are the requirements of bituminous mixes? Explain the steps for design of bituminous mixes. (5)

OR

- 2 (A) What is the bitumen emulsion? Explain the types of bitumen emulsion. (6)  
 (B) The CBR value of sub grade soil is 8%, calculate total thickness of a pavement using (5)  
 (i) design curve developed by California State Highway Department  
 (ii) design chart recommended by IRC  
 (iii) design formula developed by the US Corps Engineers  
 Assume 4100 kg wheel load or medium light traffic of 300 commercial vehicles per day for design. Tyre pressure = 6 kg/cm<sup>2</sup>. Graph of Design Chart by California State Highway Department and C.B.R. Design Chart ( Recommended by IRC) which given on page no.3

3 Attempt any Two:

- (A) What is co-ordination? What are the factors affecting it?

(12)

## Section – II

- 4 (A) What is trip production and trip attraction? What are the factors affecting the trip production and trip attraction. (6)
- (B) Explain the warping stresses and frictional stresses. (6)

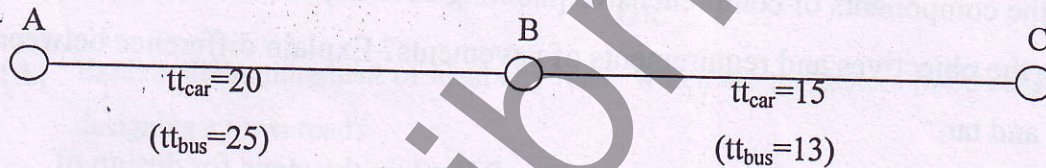
OR

- 4 (A) Define the terms: Screen line, Base Year, Desire line, Centroid, Trip, Study area (6)
- (B) Explain the Burmistor's method. Which are the assumptions of Burmistor's approach? (6)
- 5 (A) What is pavement evaluation? Explain the methods of pavement evaluation. (6)
- (B) Explain the types of joints in rigid pavement. (5)

OR

- 5 (A) What are the needs for highway maintenance? Explain classification of maintenance works. (6)
- (B) Explain Flexible pavement failures with figure. (5)
- 6 **Attempt any Two:** (12)

- (A) Explain the Trip end model and Trip interchange model.
- (B) Explain Diversion curves and Capacity restraint assignment techniques.
- (C) Three zones A, Band C are connected by two lane roads as shown in the figure below, with travel time by bus shown in bracket and travel time by car.



The probability ( $P_c$ ) of choosing the car mode is found to be given by

$$P_c = \frac{1}{1 + e^{-u(x)}}, \text{ Where } U(x) = 0.86 - 0.08 (tt_{car} - tt_{bus})$$

The total trips exchanges' between zones are as follows:

From	To	Person-trips per day
A	B	1200
B	A	0
A	C	500
C	A	1800
B	C	400
C	B	500

Determine the 2 way volume in cars per day on the road AB if the average car occupancy is 2.8.

# FIGURES

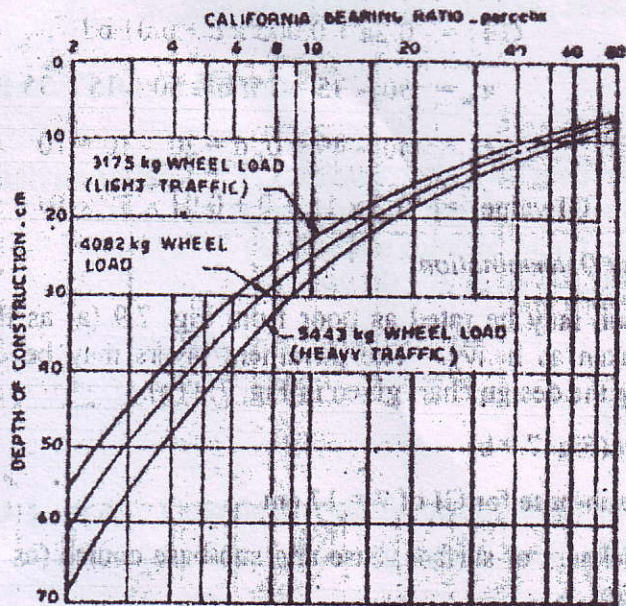


Fig. No. 1 Design Chart (California State Highway Department)

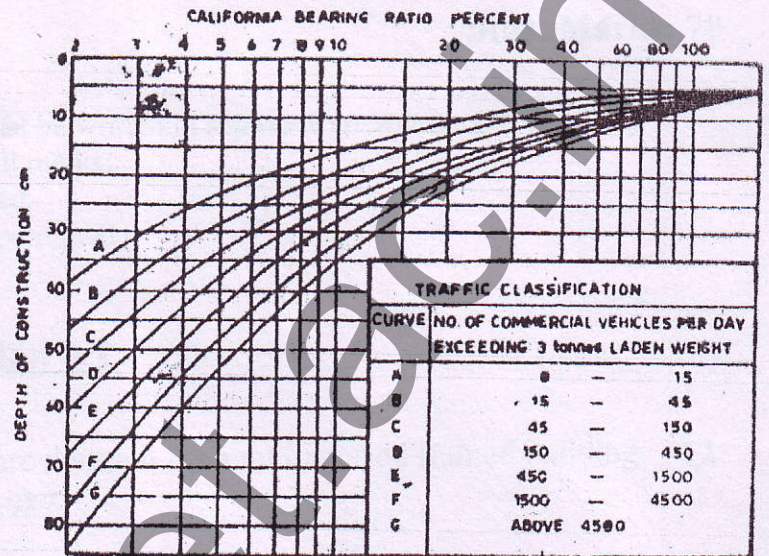


Fig. No. 2 C.B.R. Design Chart (Recommended by IRC)

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