Ref. No.: EX/CE/5/T/401/2017 (S)

B. CIVIL ENGINEERING (EVENING) 4TH YEAR 1ST SEMESTER SUPPLEMENTARY 2017

TRANSPORTATION ENGINEERING –II

Time: 3 Hours **Full Marks: 100**

(50 marks for each part)

Part I

Use Separate Answer scripts for each Part

Answer ALL Questions

1. Write short notes on the following – 4×5=20
   a. Moving Car Method
   b. Automatic methods of volume study
   c. Traffic volume growth factors
   d. Presentation of Accident Data

2. Determine the Time mean, Space mean, Design, Maximum allowable, Minimum allowable and Modal Speeds for the following observations of a NH. 2+2+3+3+3+2

Speed Range	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency	25	70	90	100	90	25

3. The parking survey data collected from a 10-bay parking lot by license plate method is as shown below. Determine Overall Parking Load, Average Parking Index, Parking Volume, Average Turnover, and Average Duration of the parking lot. 5×3=15

Time	Bays									
	1	2	3	4	5	6	7	8	9	10
0-10	--	0669	7469	7486	6140	3212	9777	3331	8265	8545
10-20	8720	0669	7469	7486	6140	3212	9777	3331	5278	8545
20-30	8720	--	7469	7486	6140	3212	8484	6894	8470	8545
30-40	8720	8516	7469	7486	6140	3212	8484	6894	8470	--
40-50	8720	8516	7469	7486	6712	--	8484	6894	8470	3856
50-60	8720	8516	2742	3402	6712	--	8484	0306	6834	3856

Form A: Paper-setting Blank Ref No. EX/CE/5/T/401/2017(S)

B.CIVIL ENGG.(EVENING) 4TH YEAR 1ST SEM. SUPPLEMENTARY 2017

(1st /~~2nd~~ Semester/~~Repeat~~/Supplementary /~~Spl. Supplementary /Old/Annual/Bi-Annual~~)

SUBJECT: TRANSPORTATION ENGINEERING-II

(Name in full)

PAPER ××××

Time: ~~Two hours~~/ Three hours~~/Four hours/Six hours~~ **Full Marks ~~30~~/100**

(~~15~~/50 marks for each part)

Use a separate Answer-Script for each part

1 OF 3

Part - /~~II~~

No. of Question		Mark
	• *Maintain neatness.* Do not retain mobile phone during examination. • *Assume reasonable data if it is not supplied.* • *Question no.1 is mandatory, answer any other two questions alongwith question no. 1* • All drawings-must be drawn by pencil • Code IRC: 37-2001 will be allowed with the students to answer the questions	
(1)(a)	Design a flexible pavement using the following data by any conventional method: CBR value of subgrade = 8% CBR value of sub base = 20% CBR value for base = 85% Present traffic = 1600 vehicles per day Life of pavement = 18 years Annual growth = 8% Show the pavement section with neat sketch.	8+2=1
(b)	Draw by pencil and subsequently label the sections of: (1) flexible pavement and (2) rigid pavement.	2×3= 6
(c)	Write short notes on any one: (i) One layer system, (ii) Two layer system	4
(2)(a)	Either answer (I) and (II) or answer only (III) (I) What should be the design approaches regarding the strategies in a country like India? Discuss.	5
	(II) Discuss about any one - (1) Fixed traffic level approach and (2) Fixed standard vehicle approach"	4
	or (III) Give the Possible causes of following flexible pavement distress: (1) Alligator cracking (2) Longitudinal cracking (3) Ravelling (4) Rutting (5) Bleeding	3×3=9
(b)	What are the differences and similarities between "Railway transportation" and "Roadway transportation"?	2×3=6
(3)(a)	What are the requirements of a pavement?	3
(b)	During design of pavement, what are the factors which may affect the design?	5
(c)	Using a 25 cm diameter rigid plate, load tests conducted on soil subgrade and over a 15 cm trial base course yielded 2.4 mm deflection at 1.0 and 4.0 kg/cm^2 respectively. Estimate the thickness of base for a wheel load of 4100 kg with a tyre pressure of 5.8 kg/cm^2, if permissible deflection is 2.5 mm.	7
(4)(a)	Using the following data find the equal deflection ESWL for a 30 cm thick pavement : (i) tyre pressure : 5 kg/cm^2, (ii) two single wheels carrying load : 5400 kg/each (iii) Centre to centre distance of tyres : 30 cm (iv) Clear spacing: 10 cm (of tyres)	10 +3

(Continued in page 2)

Form A: Paper-setting Blank *Ref No.* EX/CE/5/T/401/2017(S)

B.CIVIL ENGG.(EVENING) 4TH YEAR 1ST SEM. SUPPLEMENTARY 2017

(1st /~~2nd~~ Semester/~~Repeat~~/Supplementary /~~Spl. Supplementary /Old/Annual/Bi-Annual~~)

SUBJECT: TRANSPORTATION ENGINEERING-II

(Name in full)

PAPER ××××

Time: ~~Two hours~~/ Three hours/~~Four hours/Six hours~~ **Full Marks ~~30~~/100**

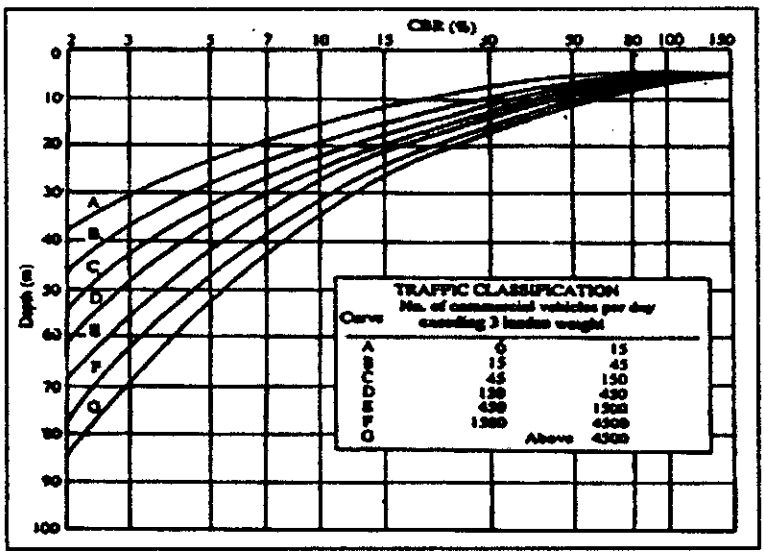
(~~15~~/50 marks for each part)

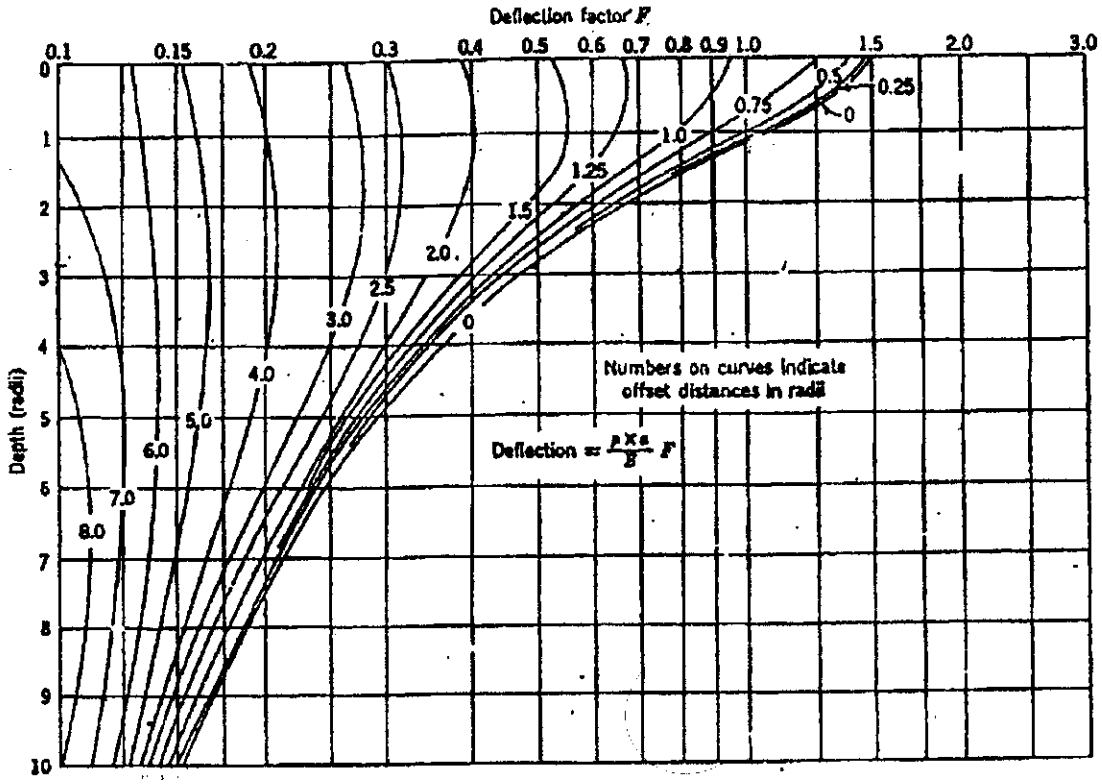
Use a separate Answer-Script for each part

Marks

Also work out the above problem (for 30 cm depth) by mechanistic-emperical design approach.

(4)(b) What is meant by "semi rigid pavement"? 2





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SUBJECT: TRANSPORTATION ENGINEERING-II

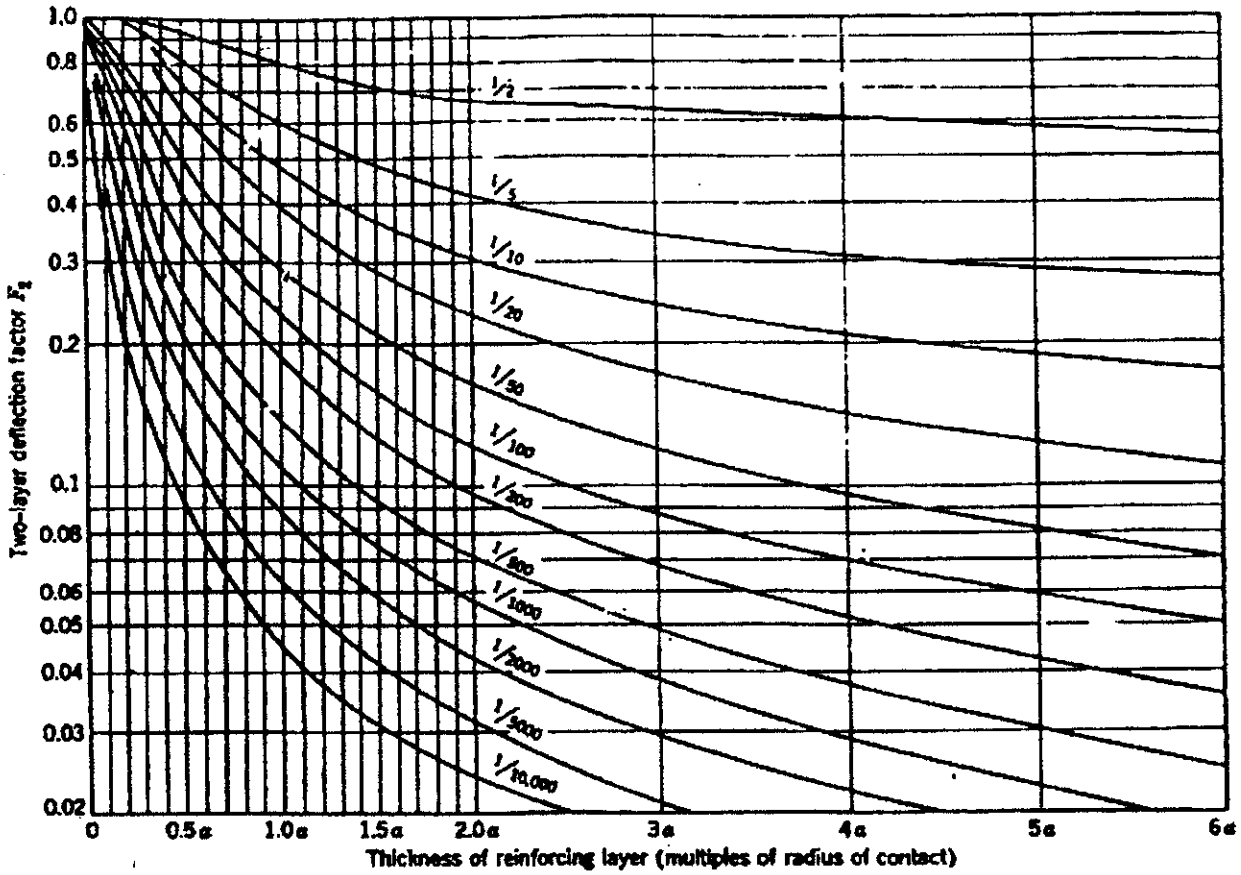
(Name in full)

PAPER ××××

Time: ~~Two hours~~/ Three hours/~~Four hours/Six hours~~ **Full Marks ~~30~~/100**

(~~15~~/50 marks for each part)

Use a separate Answer-Script for each part



End of the Question