B. CIVIL ENGG 4TH YEAR 1ST SEMESTER SUPPLEMENTARY EXAMINATION 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.   2+6
   a. Define Traffic Engineering as per Institute of Traffic Engineers, USA.
   b. Name different types of skidding and mention the main difference between them.

2.   1+2+2
   a. What is circumscribed by the external cordon line?
   b. Name the two major methods of representing Origin & Destination Survey data
   c. What is meant by a vehicle having PCU value 3?

3.   4+2
   a. Name the four major factors used to calculate projected traffic volume
   b. Find the 30th highest hourly volume from following observations of hourly traffic data –
      89, 48, 20, 66, 34, 64, 72, 52, 99, 94, 77, 81, 95, 92, 36, 35, 24, 66, 25, 75, 45, 40, 26, 30,
      84, 98, 67, 31, 26, 33, 69, 44, 95, 92, 33, 77, 81, 71, 52, 13

4.   4+1+2
   a. Name three different times associated with journey of a public mass transport and write
      them in ascending order of their magnitude.
   b. What can be measured by an Elevated Observer method of traffic survey?
   c. What types of delays are associated with the unscheduled and scheduled stoppages of a
      Bus?

5.   2+1+3
   a. Which parking study parameter can be used to indicate maximum number of entry/exit
      operations in a parking lot?
   b. What is the guideline to design the width of the aisle of a parking lot?
   c. Mention the steps, in order, that are performed in a parking operation.

6.   2+1+2+3
   a. What is a fatal accident?
   b. White is the difference between a white and yellow road marker?
   c. Name the two major 'across the road' markers.
   d. Classify, with one example each, regulatory traffic signs

7.   4+4+2
   a. When and How much correction is to be made to 'left turning' and 'right turning' traffic
      flow for design of optimum signal cycle?
   b. Considering that the optimum signal cycle is given by, $C_0 = \frac{5+L}{1-Y}$; explain the terms 'L'
      and 'Y'.
   c. What is the right turning saturation flow for a signalised right turning phase with right
      turning radius as 30m?

B.CIVIL ENGG. 4ᵗʰ YEAR 1ˢᵗ SEMESTER SUPPLEMENTARY EXAM. 2017

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

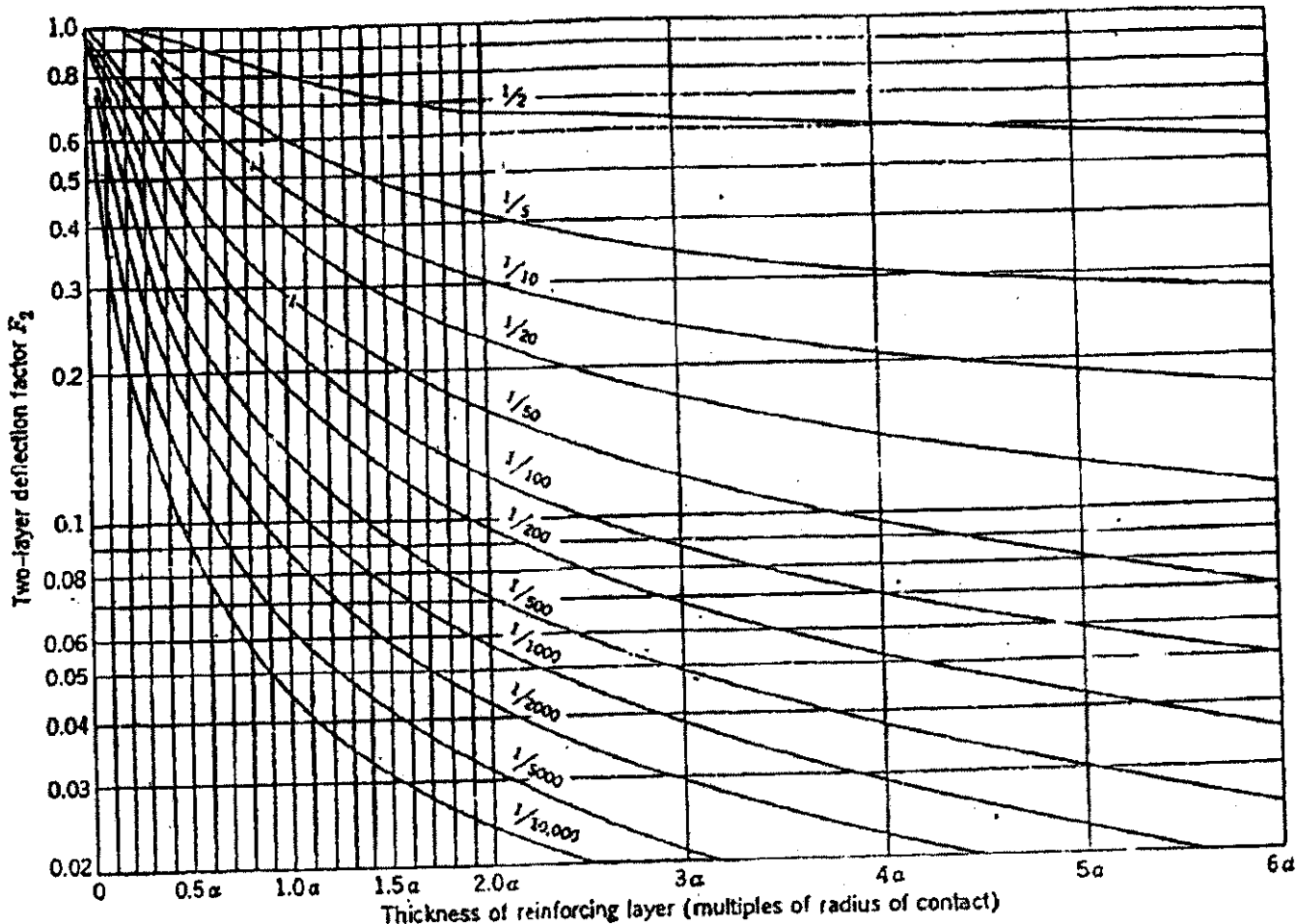SUBJECT: TRANSPORTATION ENGINEERING-II

(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

No. of Question	1 OF 3	Marks
	Part ~~I~~/II	
	1. *Maintain neatness. Assume reasonable values of data if it is not supplied.* 2. *Answer any two questions* 3. *All drawings-must be drawn by pencil,* **Do not retain mobile phone during examination.** 4. **No code etc. will be needed to answer the questions of this part.**	
(1)(a)	Using the following data find the equal deflection ESWL for a 30 cm thick pavement by conventional approach: (i) tyre pressure : 5.2 kg/cm^2, (ii) two single wheels carrying load : 5100 kg/each (iii) Centre to centre distance of tyres : 30 cm (iv) Clear spacing: 10 cm (of tyres)	10
(b)	Give the Possible causes of following flexible pavement distress (any two): 1. Bleeding 2. Ravelling 3. Rutting 4. Alligator cracking 5. Longitudinal cracking ×××	2×3=6
(c)	Write short notes on any one: (i) Two layer system, (ii) One layer system	4
(d)	Discuss about the design approaches which should be considered regarding the strategies in a country like India.	5
(2)(a)	Using a 25 cm diameter rigid plate, load tests conducted on soil subgrade and over a 15 cm trial base course yielded 2.5 mm deflection at 1.0 and 4.2 kg/cm^2 respectively. Estimate the thickness of base for a wheel load of 4000 kg with a tyre pressure of 5.5 kg/cm^2, if permissible deflection is 2.5 mm.	8
(b)	Design size and spacing of dowel bars at an expansion joint of concrete pavement of thickness 25 cm. Given: The radius of relative stiffness = 75 cm. Design wheel load 5100 kg. Load capacity of the dowel system is 40 percent of design wheel load. Joint width is 1.8 cm and the permissible stress in shear, bending and bearing stress in dowel bars are 1000 kg/ cm^2, 1400 kg/ cm^2 and 100 kg/ cm^2 respectively.	8
(c)	Either answer "(I) and (II)" or answer only (III)	
	(I) What are the differences between – (1) "Fixed traffic level approach" and (2) "Fixed standard vehicle approach".	4
	(II) Name the typical stresses which must be considered for proper designing of the rigid pavement.	2
	or	
	(III) Draw by pencil and subsequently label the sections of: (1) Flexible pavement and (2) Rigid pavement.	2×3= 6

Form A: Paper-setting Blank   *Ref No.* EX/CE/T/411/2017(S)
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(~~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

	2 OF 3		
(2)(d)	What are the differences between "Railway transportation" and "Roadway transportation"?		3
(3)(a)	What is meant by the term "pavement design"?		2
(b)	What are the requirements of a pavement? What is meant by "semi rigid pavement"?		3+3=6
(c)	What are the assumptions involved for each layer in the stress distribution theories? What is meant by deflection factor?		2×4 =8
(d)	Give the remedial measures for any three of the following distress:		3×3=9
	1. Popouts	4. Spalling	
	2. Shrinkage cracking	5. Panel cracking	
	3. 'D' cracking	6. Reactive aggregate distresses	

Two-layer deflection factor F_2 versus Thickness of reinforcing layer (multiples of radius of contact)

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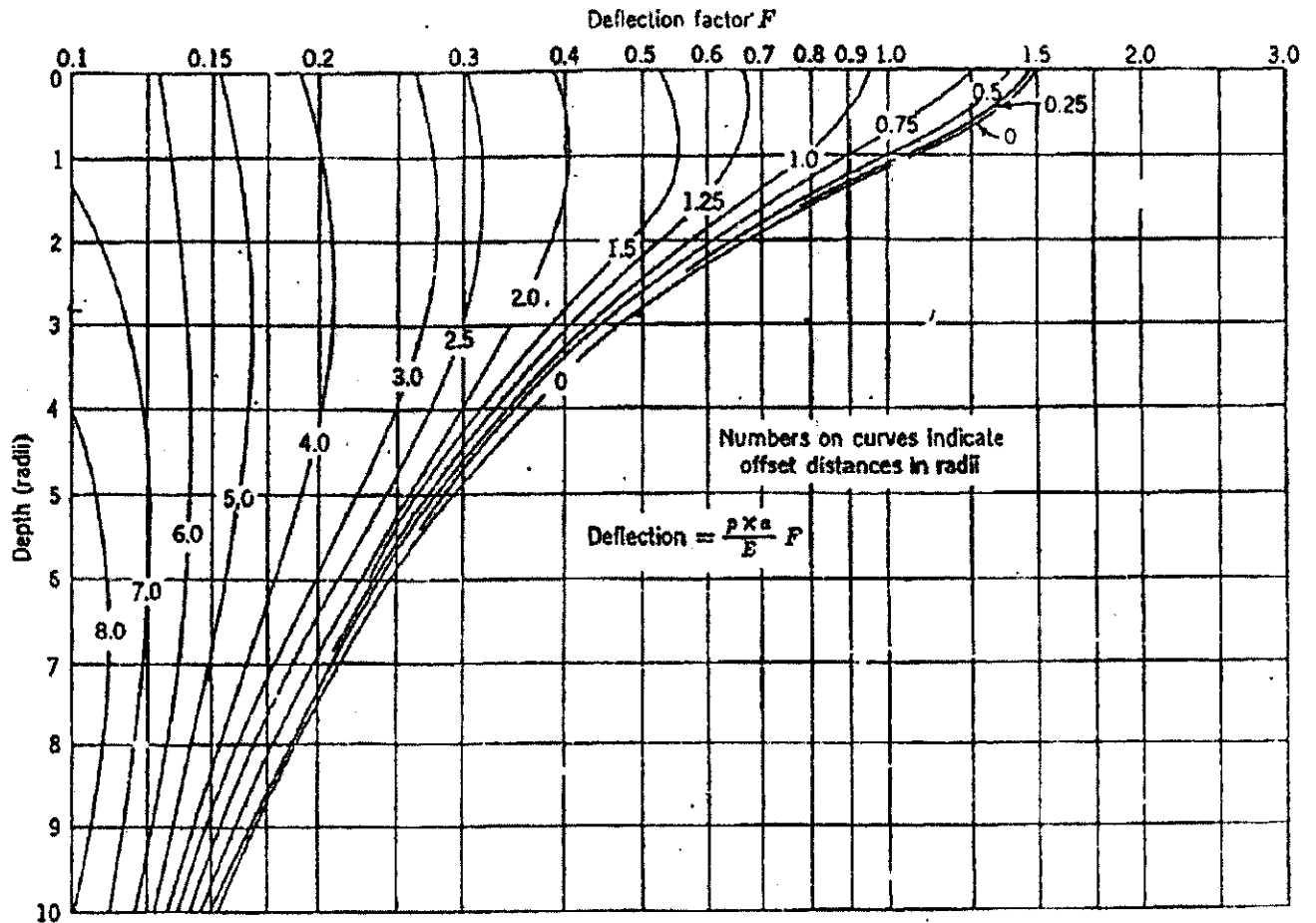SUBJECT: TRANSPORTATION ENGINEERING-II

(Name in full)

PAPER ××××

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

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

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End of the Part-II of the question