Form A: Paper-setting Blank Ref. No.: Ex/CE/T/411/2018(S) (OLD)

B.E. CIVIL ENGINEERING FOURTH YEAR FIRST SEMESTER SUPPLEMENTARY EXAM 2018 (OLD)

(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

Part -I /~~II~~

No. of Question		Marks
	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 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) Also work out the above problem (for 30 cm depth) by mechanistic-emperical design approach.	10 +3
(b)	What is meant by "semi rigid pavement"?	2
(c)	Draw by pencil and subsequently label the sections of: (1) flexible pavement and (2) rigid pavement.	2×3= 6
(d)	Write short notes on any one: (i) One layer system, (ii) Two layer system	4
(2)(a)	Design a flexible pavement using the following data by any conventional method: Area of plunger = 19.6 cm^2 Load at 2.5 mm penetration= 54 kg Load at 5.0 mm penetration= 78 kg CBR value of sub base = 25% CBR value for base = 90% Present traffic = 1400 vehicles per day Show the pavement section with neat sketch.	8+2=10
(b)	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
(c)	What are the differences and similarities between "Railway transportation" and "Roadway transportation"?	2×3=6

Form A: Paper-setting Blank Ref. No.: Ex/CE/T/411/2018(S) (OLD)

B.E. CIVIL ENGINEERING FOURTH YEAR FIRST SEMESTER SUPPLEMENTARY EXAM 2018 (OLD)

(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

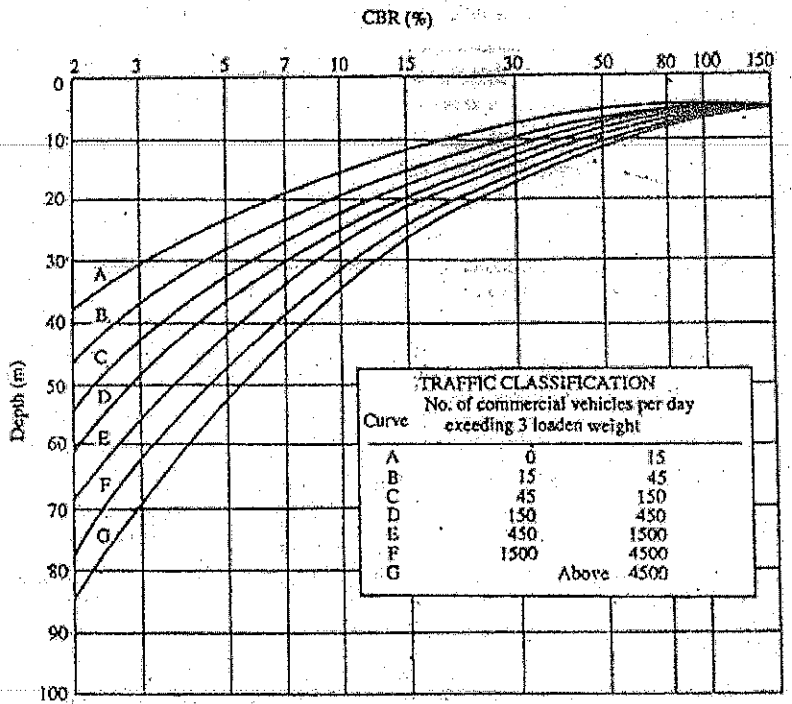
(3)(a) What are the requirements of a pavement? ~~(continued in page 2)~~ 3

(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

(d) What are the assumptions involved for each layer in the stress distribution theories? What is meant by deflection factor? 2×3 =6

(e) What are the differences between the flexible pavement and rigid pavement? 4



Original IRC Flexible Pavement Design Curves (IRC 37-1955)

(continued in page 3)

Form A: Paper-setting Blank

Ref. No.: Ex/CE/T/411/2018(S) (OLD)

B.E. CIVIL ENGINEERING FOURTH YEAR FIRST SEMESTER SUPPLEMENTARY EXAM 2018 (OLD)

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

SUBJECT: **TRANSPORTATION ENGINEERING-II**

(Name in full)

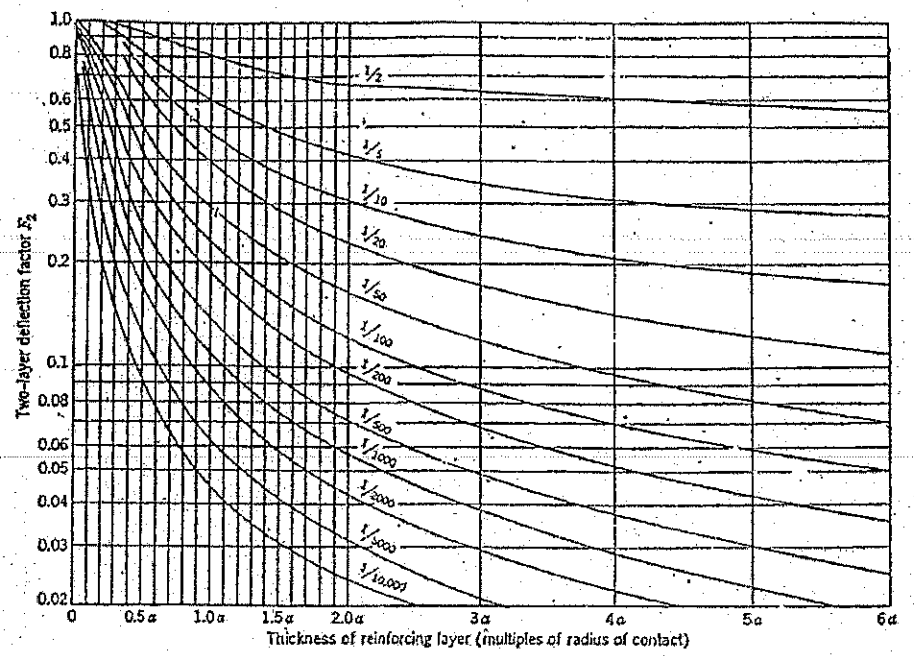
PAPER ××××

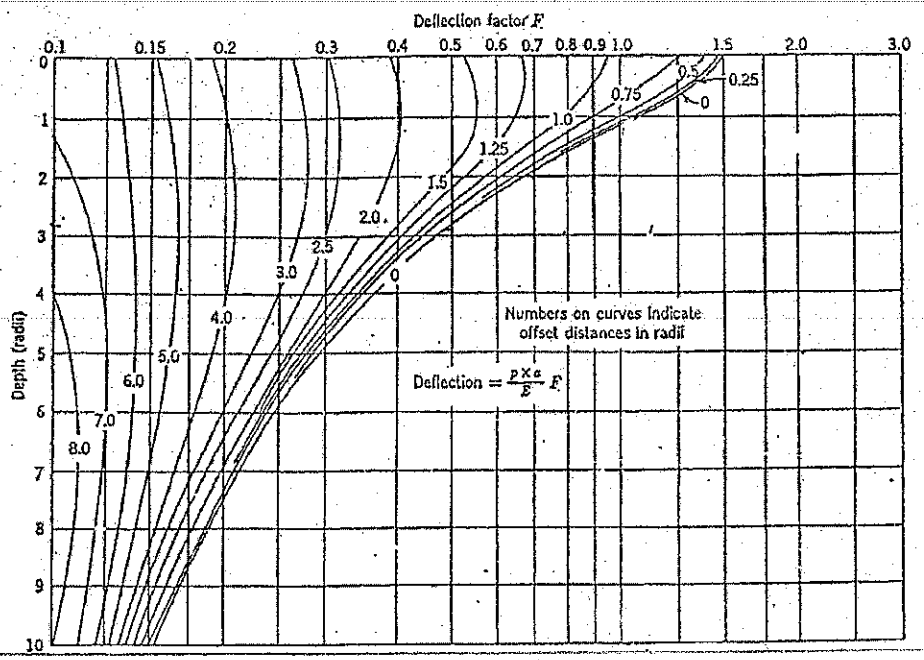
Time: ~~Two hours~~/ Three hours/~~Four hours/Six hours~~

Full Marks ~~30~~/100

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

Use a separate Answer-Script for each part





Ref. No.: EX/CE/T/411/2018(S) (OLD)

B. CIVIL ENGG 4TH YEAR 1ST SEMESTER SUPPLEMENTARY EXAMINATION 2018 (OLD)

TRANSPORTATION ENGINEERING – II

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

Part II **(50 marks for each part)**

Use Separate Answer scripts for each Part

Answer ALL Questions

1. Illustrate the following - 5×3
   a. Representation of Accident Data
   b. Regulatory Traffic Sign
   c. Road Marker

2. From the following observations, determine the average traffic volume, journey time and running time over the section AC. 5

Section	Length (m)	Time Taken (sec)	Vehicles met with		
			Opposite Direction	Overtaking	Overtaken
AB	500	189	19	9	8
B	---	58	28	--	--
BC	600	163	17	14	6
CB	600	169	29	7	10
B	---	55	17	--	--
BA	500	162	30	14	11

3. Determine Overall Parking Load, Average Parking Index, Parking Volume, Average Turnover, and Average Duration of the parking lot from the following parking survey data. 5

Time	Registration Number of vehicles parked in bays											
	1	2	3	4	5	6	7	8	9	10	11	12
0-10	3886	4959	--	2651	1153	8629	4097	3751	4894	8907	9155	5950
10-20	5014	4059	--	2651	1153	8629	4097	3751	3087	8907	9155	5950
20-30	5014	2717	2206	2651	1153	8629	4097	3751	3087	8907	9155	5950
30-40	--	2717	2206	--	1153	8629	4097	3751	3087	5930	9155	5950
40-50	3223	--	2206	7763	1153	8629	--	--	3087	--	8407	5950
50-60	3223	1577	2206	--	1153	--	--	--	--	--	--	5950

4. Two 4-lane single carriageway undivided roads spreading in North-South and East-West direction intersect each other perpendicularly at point X. Solve the intersection carrying traffic as given below by designing a suitable 4-phase optimum signal cycle with opposite right turners provided dedicated phase separately from corresponding straights & left turns. The vehicular starting delay and vehicular Amber period are 3sec and 4sec respectively for each phase. 15

From		North			South			East			West	
To	E	S	W	W	N	E	S	W	N	N	E	S
flow	34	885	37	63	518	50	28	769	43	85	997	84

5. State warrants for traffic signal system and Comment on modification of intersection saturation flow on the basis of intersection quality 8+2