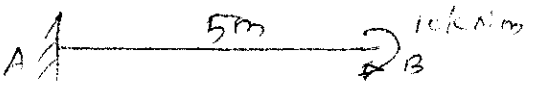
B. Tech Degree IV Semester Examination, April 2010

CE 403 ANALYSIS OF STRUCTURES I

(2002 Scheme)

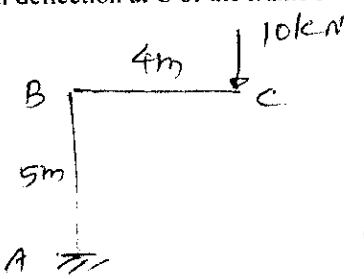
Time : 3 Hours Maximum Marks : 100

I. (a) Calculate the vertical deflection at B of the cantilever shown. Use strain energy method.



(EI = constant) (10)

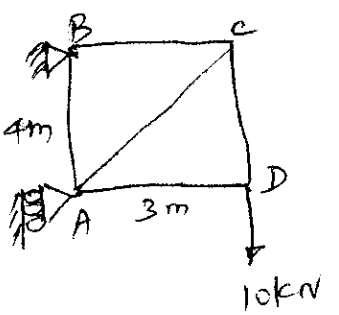
(b) Calculate the vertical deflection at C of the frame shown. Use strain energy method.



(EI = constant) (10)

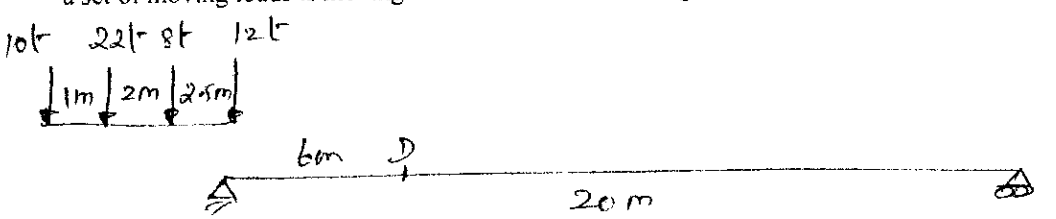
OR

II. Compute the horizontal deflection at the joint D of the truss shown. The load 10 kN at D is vertical.



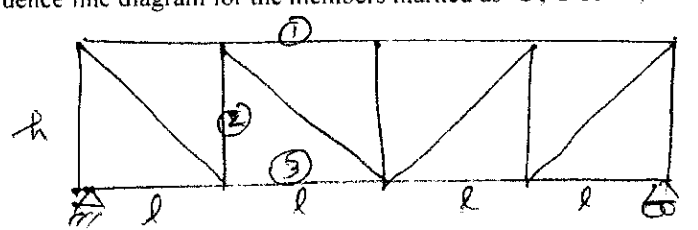
(AE = constant) (20)

III. Compute the maximum SF and maximum BM at the section D of the beam, when a set of moving loads is moving from the left end to the right end of the beam. (20)



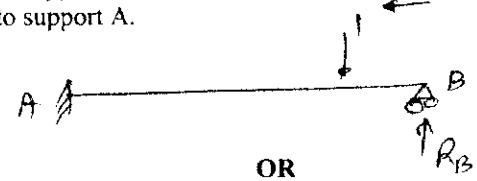
OR

IV. Draw influence line diagram for the members marked as ①, ② & ③, on the truss shown. (20)



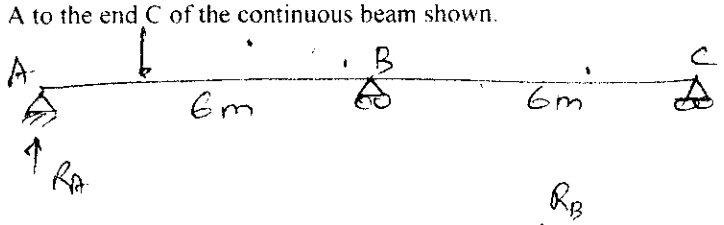
(Turn Over)

V. Draw ILD for support reaction R_B of a fixed beam shown, when a unit load moves from end B to support A. (20)

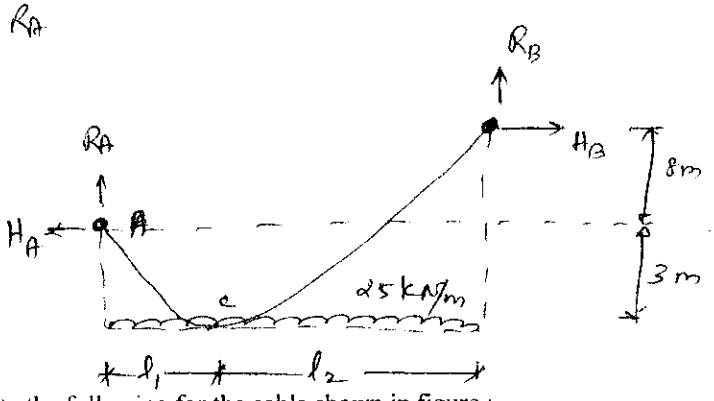


OR

VI. Draw influence line diagram for the reaction R_A when a unit load moves from the end A to the end C of the continuous beam shown. (20)



VII.



Compute the following for the cable shown in figure :

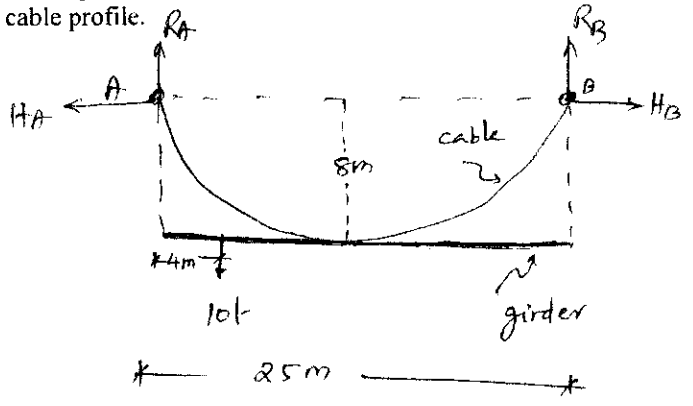
(i) Support reaction R_A, R_B, H_A and H_B

(ii) Maximum and minimum tension in the cable

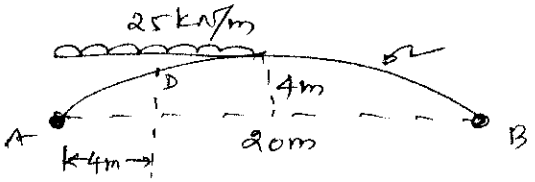
(iii) Length of the cable profile. (20)

OR

VIII. Compute the uniformly distributed load experienced by the cable and the girder, when a vehicular load of 10t occupies the girder at a distance of 4 m from the left end of the girder. Also compute the reactions R_A, R_B, H_A and H_B of the cable. Compute the length of the cable profile. (20)



IX.



Two hinged parabolic arch compute the radial shear and normal thrust at section D of the two hinged parabolic arch shown above. (20)

OR

X. Draw BMD for the arch shown in question No.IX. Obtain the maximum Bm and its location also. (20)

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