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RN-8185

B. E. - II (Sem. IV) (Civil) Examination

May / June – 2010

Structural Analysis - II

(As per GTU Syllabus)

Time : Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - 2 (Sem. 4) (Civil)**

Name of the Subject :

☛ **Structural Analysis - 2**

☛ Subject Code No. : **8 1 8 5** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

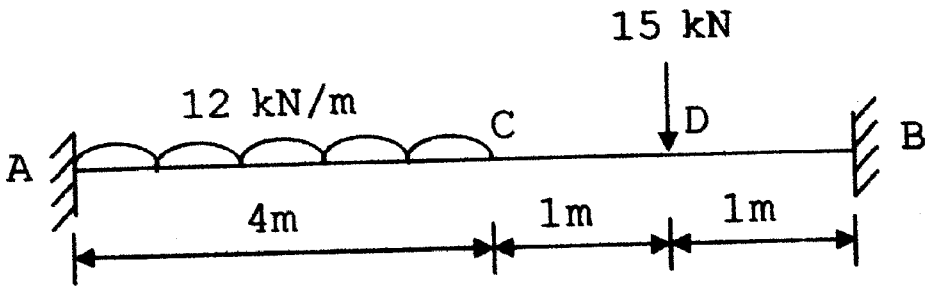
Student's Signature

(2) Assume suitable data if necessary.
(3) Figures to the right indicate full marks.
(4) Attempt all the questions.
(5) Use of Non-programmable calculator is allowed.

SECTION - I

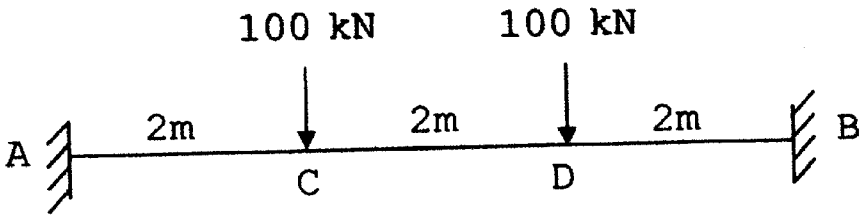
1 Attempt any **two** questions : **20**

(a) A beam of uniform section is built-in at each end so as to have a clear span of 6 meters. It carries a uniformly distributed load of 20 kN/m on left half of the span, together with a point load of 150 kN at 5m from left end. Find the fixing moments and the reactions at the ends and draw the B.M. and S.F. diagram for the beam.



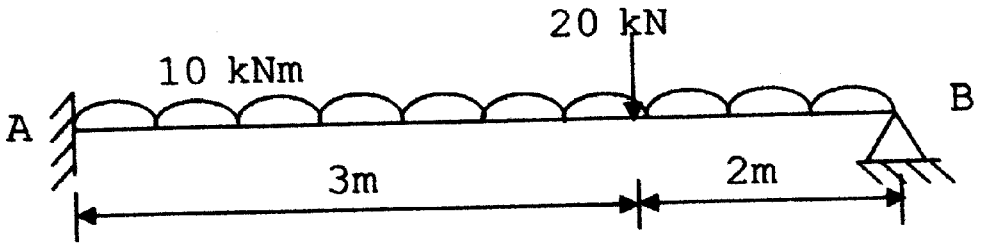
(b) A continues beam ABC fixed at A and C and simply supported at B consist of span AB and BC of length 4m and 6m respectively. The span AB carries a uniformly distributed load 20 kN/m while the span BC carries a uniformly distributed load 12 kN/m. Find the moments and reactions at the supports. Draw also B.M. and S.F. diagrams for the beam.

(c) A fixed beam of 6 meters span supports 2 point loads of 100 kN each at 2 meters from each end. Find the fixing moments at the ends and draw the B.M. and S.F. diagrams. Also find the central deflection.
Take I = 9×10^8 mm^4 and E = 200 kN/mm^2.

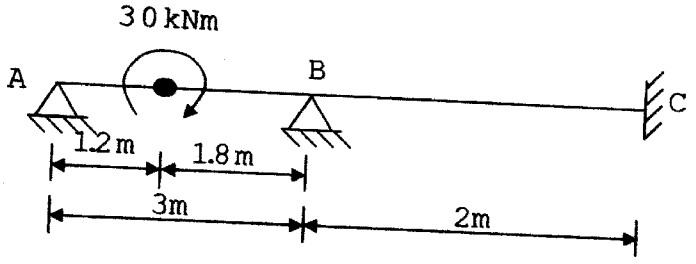


2 Attempt any **two** questions : **20**

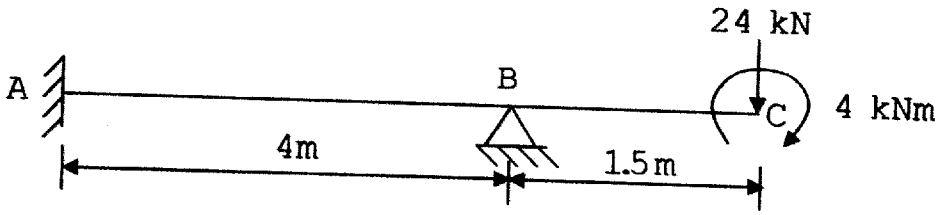
(a) Analyse the propped cantilever beam shown in figure below. Also, draw the S.F. and B.M. diagrams by using moment distribution method.



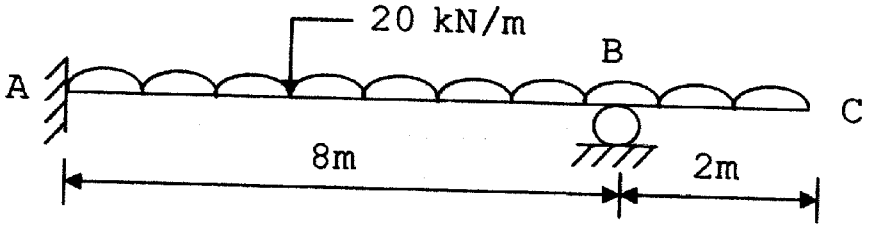
(b) Find the support moments and draw the bending moment diagram for the beam shown in figure below. The beam is of uniform section.



(c) Analyse the beam shown in figure below. Also, draw the S.F. and B.M. diagrams by using moment distribution method.

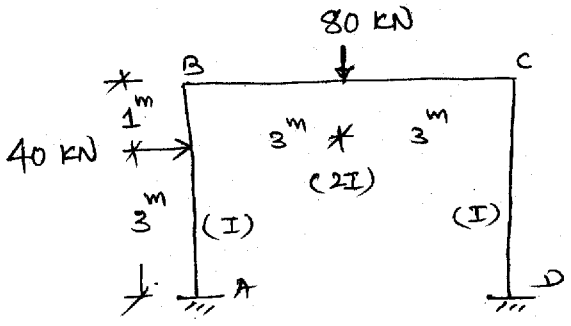


3 Determine all the reaction components and draw shear and moment diagrams for the beam of figure below by consistent deformation method. **10**

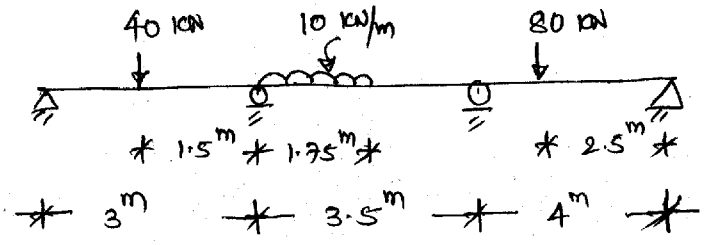


SECTION - II

4 Analyse the following frame by Slope-deflaction S-D) method. **16**

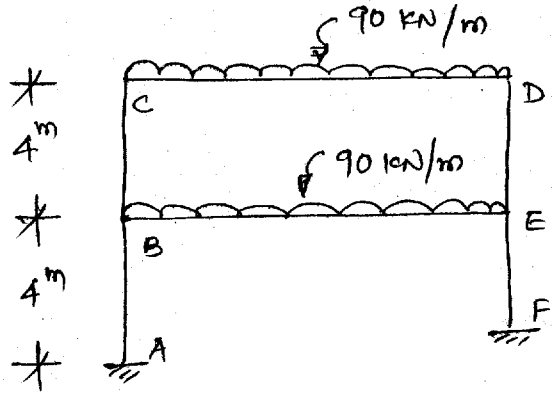


5 Draw SFD and BMD by Kani's Method. 18



OR

5 Analyse the following frame by Kani's method. 18



6 (a) Explain loss of prestress in detail. 10

(b) A post tensioned beam is provided with a cable subjected to an initial stress of 1100 N/mm^2. If a slip of 4.5 mm is observed at the jacking end. Find percentage loss of stress due to anchorage slip, if the span of the beam is 18 m $E_S = 2 \times 10^5$ μ Pa. 6

OR

6 (a) Explain Muller-Breslau principle. 6

(b) Draw influence line diagram for R_A, R_B and M_a (M_A) for following beam. 10