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TE-sem-V-OLD-Civil-SA-II

18/11/15

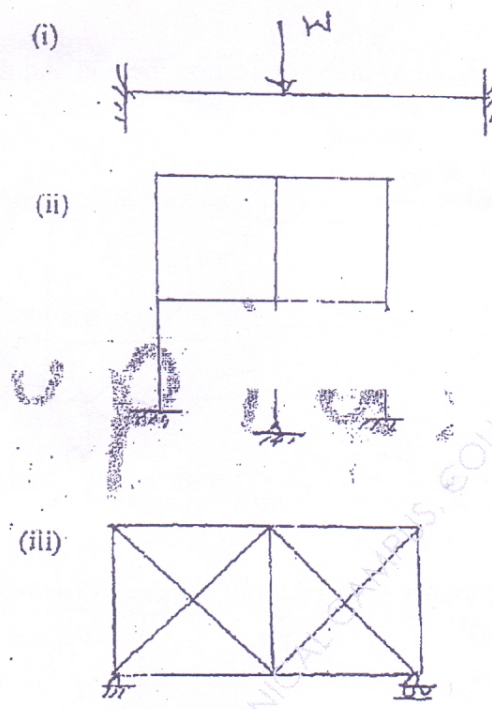
QP Code : 1601

(3 Hours)

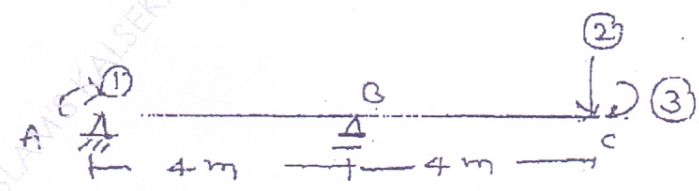
[Total Marks : 100

- N. B. : (1) Question No. 1 is compulsory.
(2) Attempt any four out of remaining six questions.
(3) Assume any suitable data wherever required but justify the same.

1. (a) Determine the degree of static and kinematic indeterminacy for the following structure. Neglect the axial deformations. 6



- (b) Develop the flexibility matrix for the beam with respect to the coordinates shown in figure :- 6

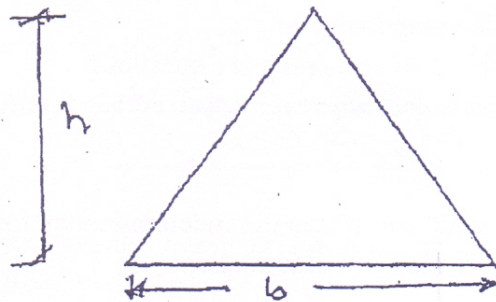


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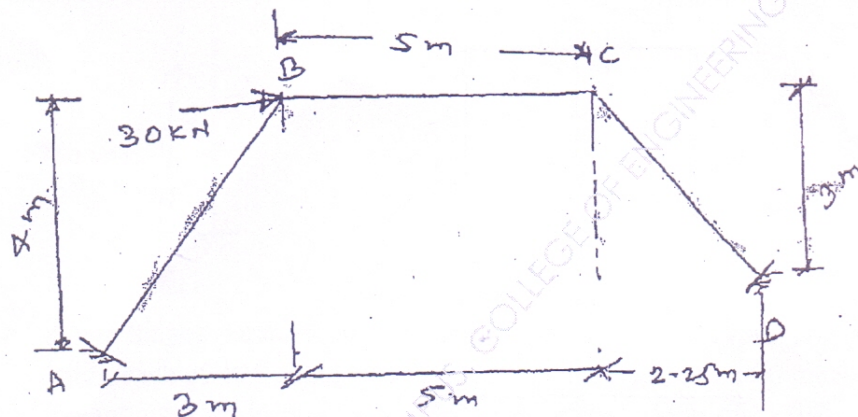
QP-Con. 6857-15.

MUPD15025 ANJUMAN-ISLAMIAH-TECHNICAL-SERVICES COLLEGE OF ENGINEERING, NEW PANVEL 18-11-2015 14:13:18

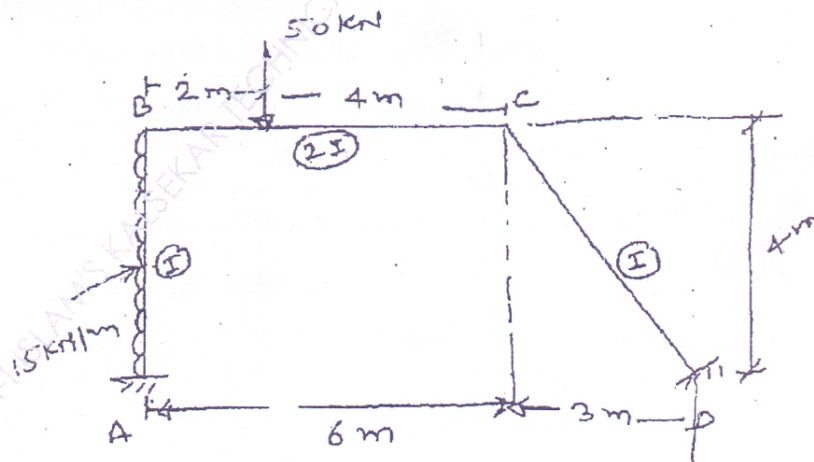
- (c) Determine the shape factor for the triangular section as shown in figure:- 8



2. Analyse the structure shown in figure by slope deflection method and draw BMD and deflected shape. 20

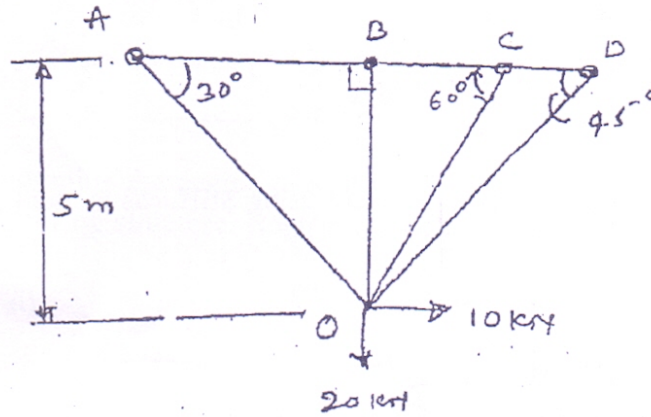


3. Analyse the frame as shown in figure by method of moment distribution and draw B.M.D. (length $AB = 4$). 20

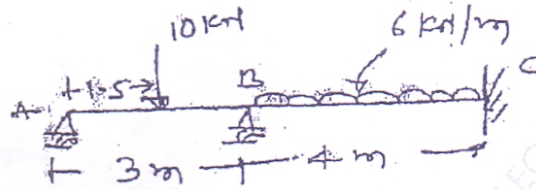


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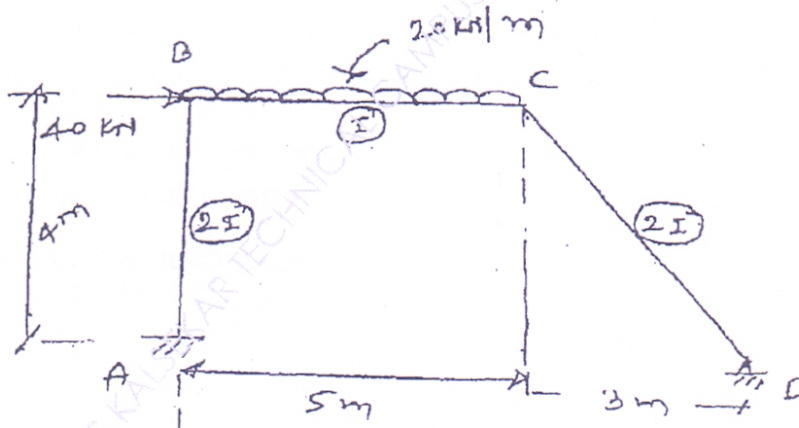
4. (a) Analyse the pin-jointed structure shown in figure by flexibility method 12
 the cross sectional area of each member is 20 cm^2 .
 Take $E = 2000 \text{ kN/cm}^2$



- (b) Analyse the continuous beam shown in figure by using Stiffness method. 8

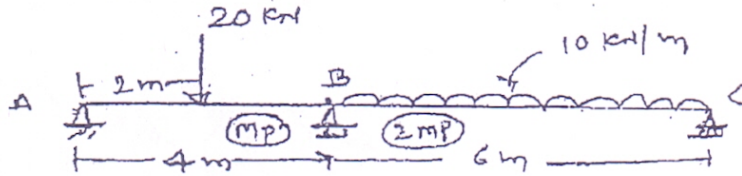


5. Analyse the frame shown in figure by using Force method and draw B.M.D. 20

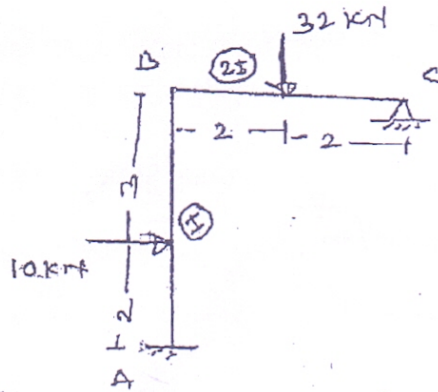


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6. (a) Calculate the plastic moment capacity required for the continuous beam with working loads as shown in figure. 10



- (b) Analyse the frame as shown in figure using Stiffness method. Draw B.M.D. 10



7. (a) A two hinged parabolic arch of span 20m and rise 4 m carries two point loads, each 30 kN, acting at 5 m and 10 m from the left end respectively the moment of inertia varies as the secant of slope. Determine the horizontal thrust and maximum positive and negative moments in the arch rib. 10
- (b) Analyse the continuous beam shown in figure by three moment theorem and draw B.M.D. Note the support B settles vertically down by 10 mm and $EI = 1600 \text{ kN-m}^2$. 10

