



University of Technology
 Building and Construction Eng. Dept.
 Final Exam – First Attempt – 2010/2011



Subject : Structural Analysis

Class: Third Class

Branch : Building & construction management

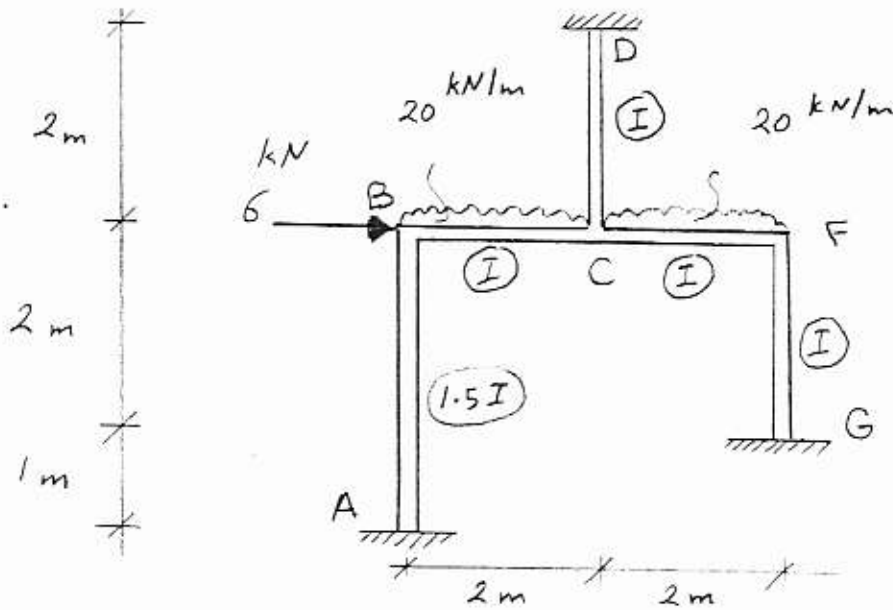
Time : 3 Hours

Examiner : Dr. Zeyad M. Ali

Date : 18 / 6 / 2011

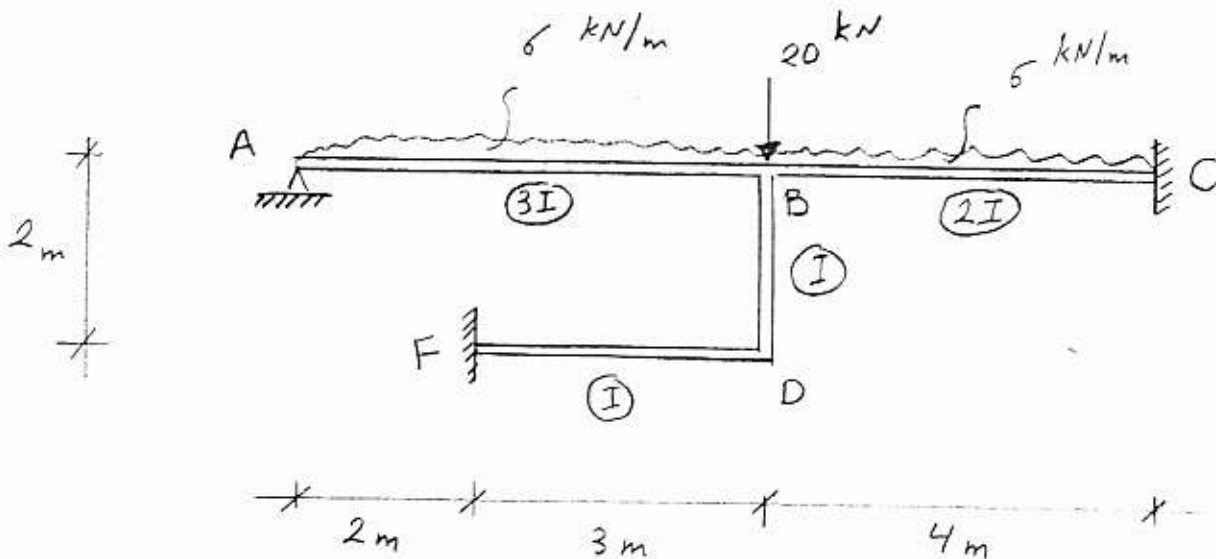
Note : Answer three questions only (Q1 include).

Q1/ Determine the end moments for the plane frame shown in the fig. (by the moment distribution method) which caused by a rotation of support $A=0.004$ rad. clockwise & a rotation of support $G=0.002$ rad. clockwise in addition to the load shown ? Given, $EI = 300 \text{ kN.m}^2$.



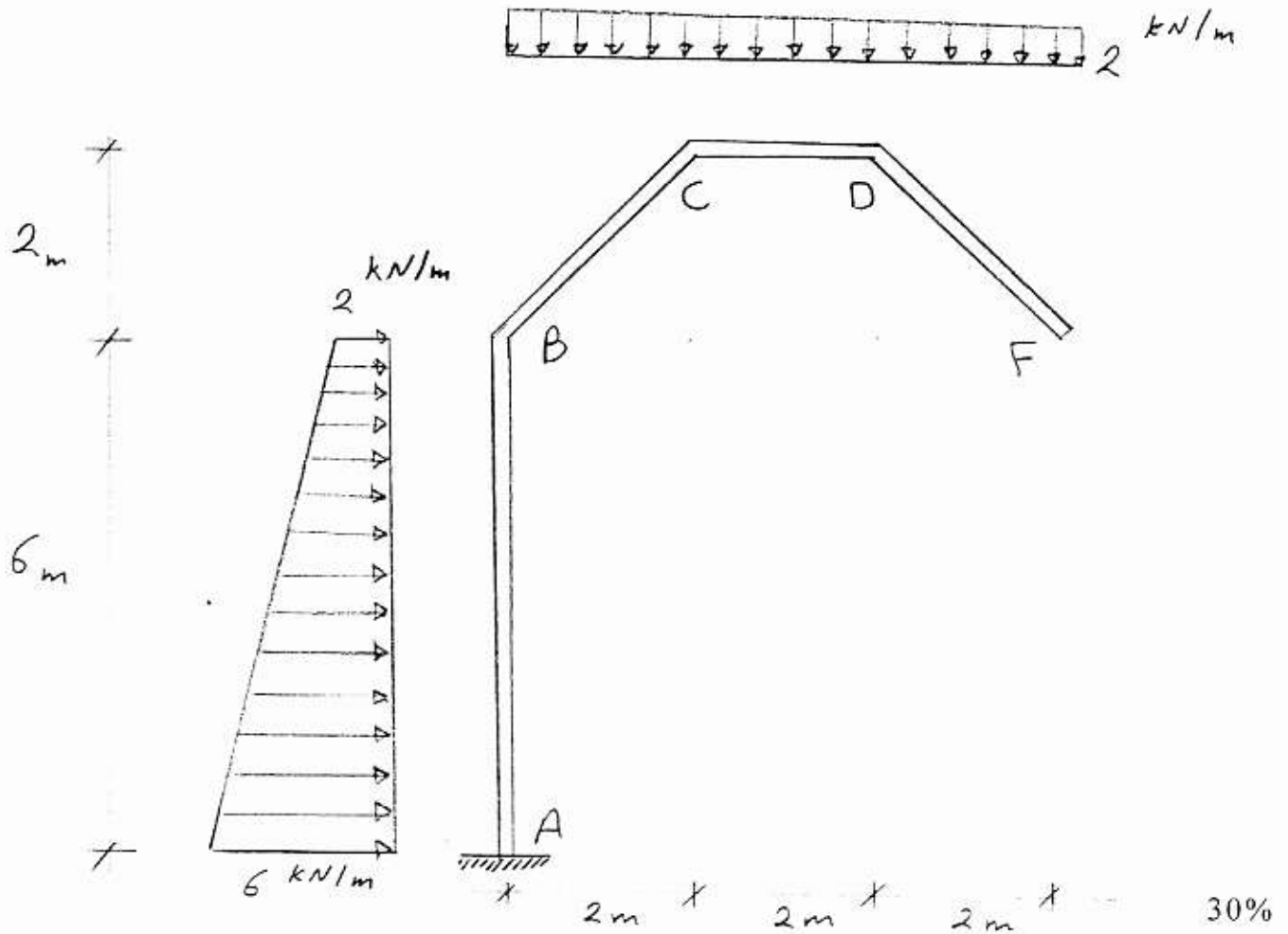
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Q2/ Write down the equations necessary to obtain the unknown deformation for the rigid plan frame shown in the fig. ? Given $EI = 15 \text{ kN.m}^2$

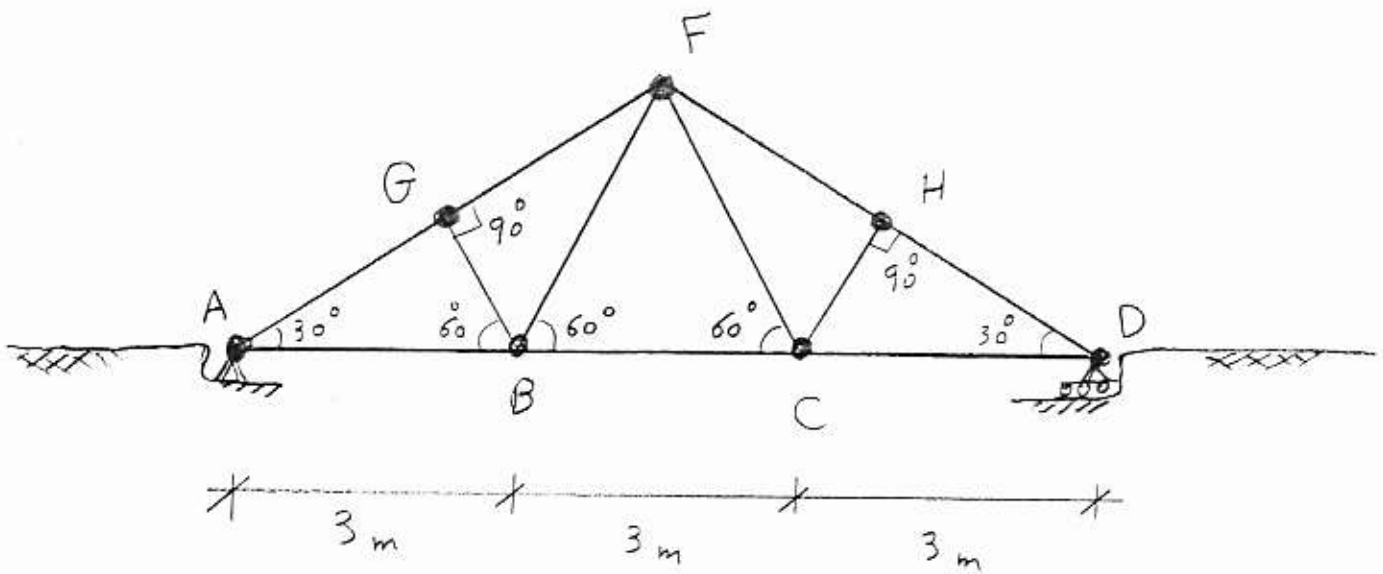


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Q3/Determine the horizontal displacement of point (F) by the virtual work method? Given $EI = 4 \times 10^4 \text{ kN.m}^2$ (constant) .



Q4/ Determine the min. value of a movable concentrated load (P) which cause a vertical deflection at (F= 3cm)? given $EA=1000 \text{ kN}$ (constant) .



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