

GROUP MEMBERS:

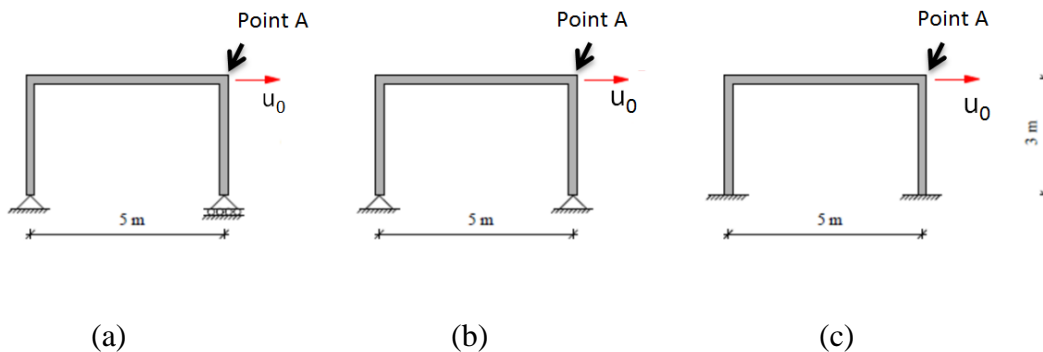
CE 8060 – STRUCTURAL DYNAMICS Homework #8

Assigned: Thursday, September 11, 2014
Due: Tuesday, September 16, 2014 (beginning of class)

Homework must be done neatly in pencil, on 8 ½" x 11" paper, stapled together. Each step must be easily followed; diagrams are useful. Your assumptions must be clearly stated.

Make Sure to Include The Cover Page!

Make Sure to Write Both Group Members' Names!



In an earlier homework, the stiffness of the frame in the direction of the load has been calculated for the three portal frames above. There is a 0.1m initial displacement at point A. For each of the three portal frames above, write a Matlab script to determine the expression for the lateral motion of the portal frame at point A represented as a SDOF system under free vibration. Plot the acceleration, velocity and displacement at point A as a function of time. Compare the response of the three systems. You can assume uniform E and I for all the frame members.

The frame properties are given as following:

- The modulus of elasticity E is 200 GPa
- The moment of inertia I is 1 cm^4
- The equivalent mass of the frame is 100 kg
- The damping ratio is 5%