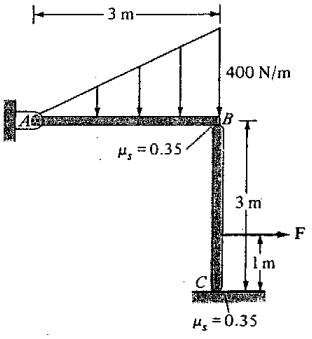
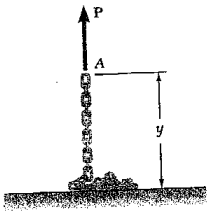
Ph. D. Qualified Examine **Statics & Dynamics** Oct. 2, 1999

1. The beam AB is carrying a distributed load. Determine the magnitude of the force F needed to pull the column BC without rotation. (20 %)



2. A chain of length L and mass m lies in a pile on the floor. If its end A is raised vertically at a constant speed v, express in terms of the length y of chain which is off the floor at any given instant (a) the magnitude of the force P applied to A, (b) the reaction of the floor. (20 %)



3. A uniform slender bar AB of mass m is suspended as shown from a small cart of the same mass m. Neglecting the effect of friction, determine the accelerations of points A and B immediately after a horizontal force P has been applied at B. (20 %)