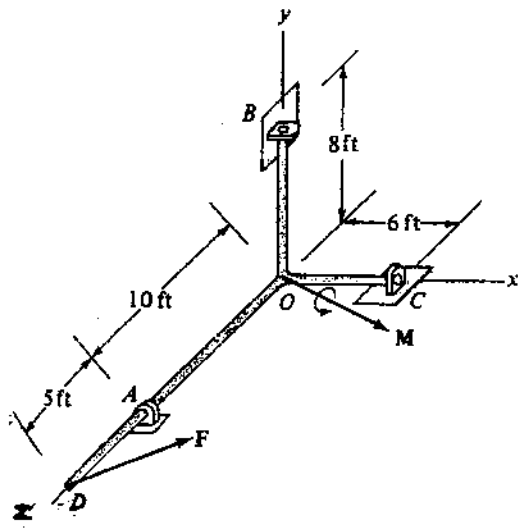


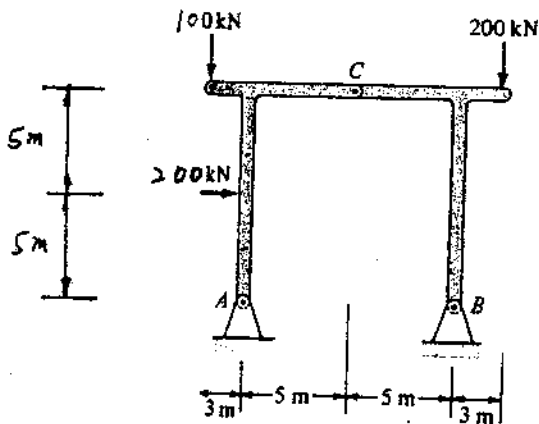
1. The frame shown in the figure is supported by the three short bearings  $A$ ,  $B$ , and  $C$ , which can exert only radial forces but no couples. If  $F = -2i + 5j - 3k$  kip and  $M = 10i - 20j + 15k$  kip-ft, determine the reactions at the supports.

(15%)



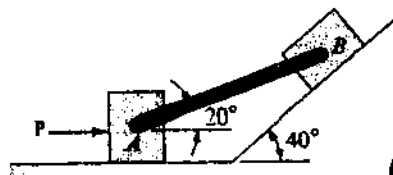
2. Determine the forces acting on each member of the frame in the figure

(15%)



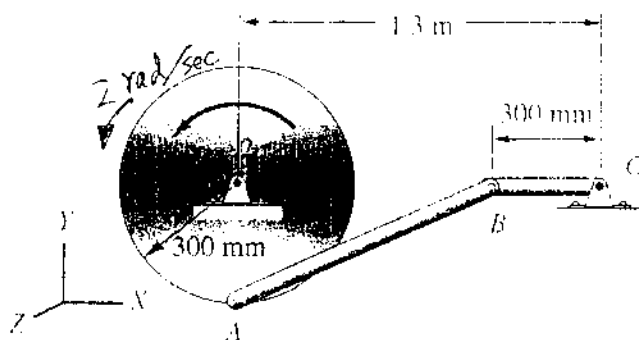
3. Blocks  $A$  and  $B$  weight 900 N and 1.5 kN, respectively. The link rod weighs 400 N. Calculate the magnitude of the force  $P$  that will start to move the system to the right. For all surfaces of contact, assume  $\mu_s = 0.3$ .

(20%)

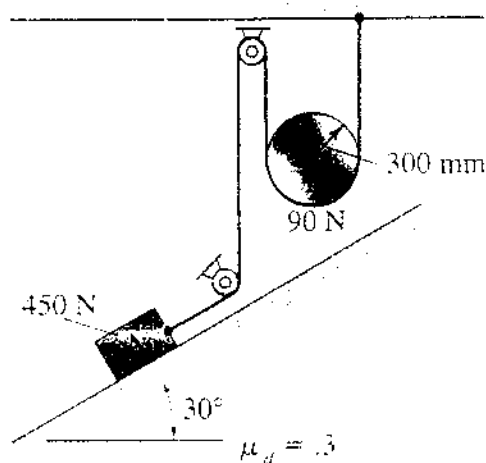


(背面仍有題目,請繼續作答)

4. Find the angular velocities and angular accelerations of both bars. (15%)



5. Neglect the weight of the cable and find the speed of the 450-N block A after it has moved 1.7m along the incline from a position of rest. The static coefficient of friction along the incline is 0.32, and the dynamic coefficient of friction is 0.30. Consider the pulley B to be a uniform cylinder. (15%)



6. A uniform rod of weight  $W$  and length  $L$  supported by a pin connection at A and a wire at B. What is the force on pin A at the instant that the wire is released? What is the force at A when the rod has rotated  $45^\circ$ ? (20%)

