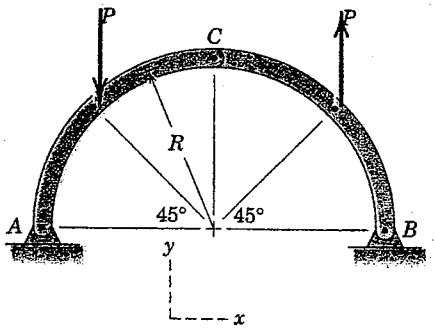
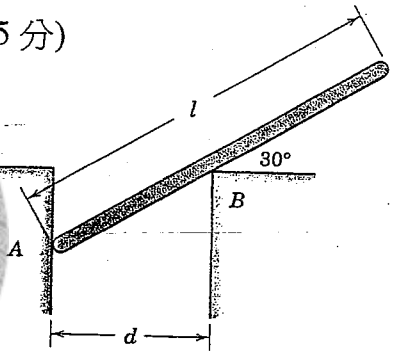
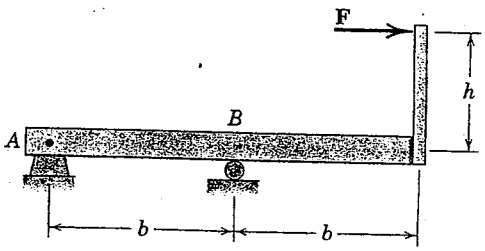
(一) Determine the components of all forces acting on each member of loaded frame. (15 分)



(二) The uniform slender bar of length l is placed in the opening of width d at the 30° angle shown. For what range of l/d will the bar remain in static equilibrium? The coefficient of static friction at A and B is $u_s = 0.40$. (15 分)

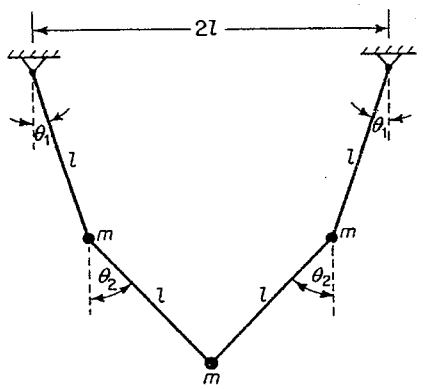


(三) Draw the shear and moment diagrams for the beam loaded by the force F applied to the strut welded to the beam as shown. (15 分)



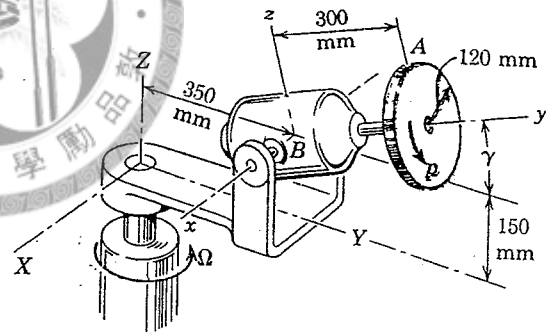
(四) Three particles, each of mass m, are located at the pin joints between four massless rods, as shown in Figure. The system hangs from support points which have a horizontal separation $2l$. Solve for the angles θ_1 and θ_2 corresponding to a condition of static equilibrium. (15 分)

接背面

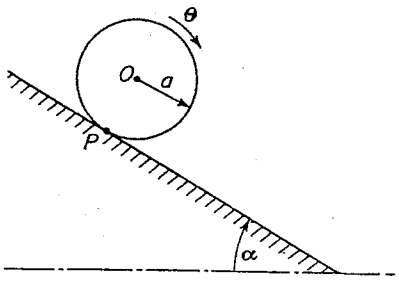


(四)

(五) The motor housing and its bracket rotate about the Z-axis at the constant rate Ω=3 rad/s. The motor shaft and disk have a constant angular velocity of spin p=8 rad/s with respect to the motor housing in the direction shown. If γ is constant at 30°, determine the velocity and acceleration of point A at the top of the disk and the angular acceleration α of the disk. (20 分)



(六) A uniform circular cylinder of mass m and radius a rolls without slipping on a plane inclined at an angle α with the horizontal. Solve for the angular acceleration. (20 分)



試題隨卷繳回