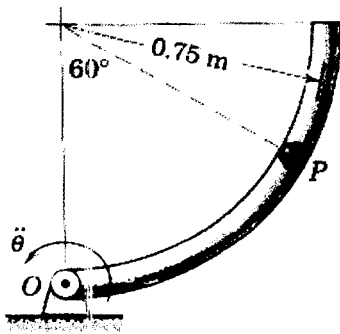


所別：機械工程學系碩士班 甲組(固力與設計) 科目：動力學

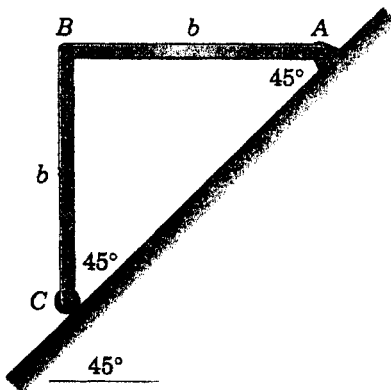
丁組(系統)

光機電工程研究所碩士班

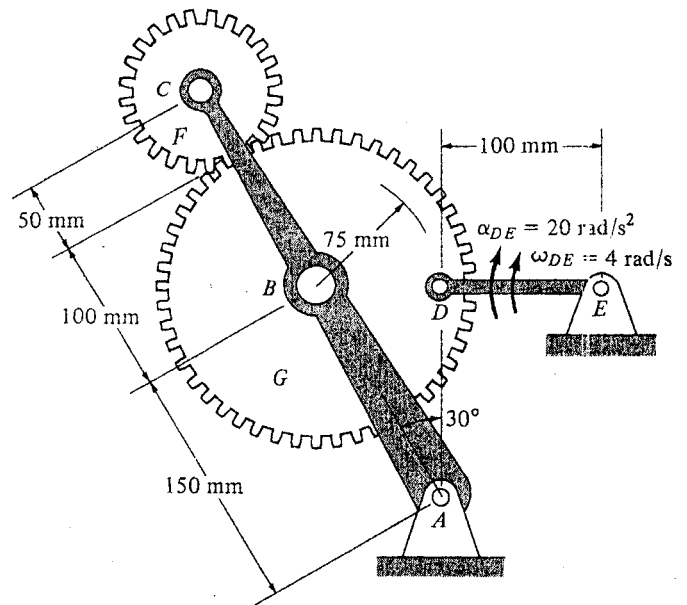
- (8%) 甚麼情況之下需要考慮柯氏加速度 (Coriolis acceleration)? (請以中文作答，且不用寫出公式)
- (17%) The quarter-circular hollow tube of circular cross section starts from rest at time $t=0$ and rotates about O in the horizontal plane with a constant counterclockwise angular acceleration $\ddot{\theta}=2 \text{ rad/s}^2$. At what time t will the 1-kg particle P slip relative to the tube? The coefficient of static friction μ_s , between the particle and the tube, is 0.8 and the coefficient of kinetic friction μ_k is 0.6.



- (25%) The two identical uniform bars are released from rest from the position shown in the vertical plane. Determine the angular velocity ω of the AB when the bars become collinear.



- (25%) The tied crank and gear mechanism gives rocking motion to crank AC , necessary for the operation of a printing press. If link DE has the angular motion shown,
 - determine the respective angular velocities and angular accelerations of gear F and crank AC at this instant. (18%)
 - Please describe *briefly* how link DE moves to accomplish a complete motion cycle of the printing press, as well as how crank DE moves! (7%)



- (25%) The system composed of four light rigid rods and the cylinder of mass m is shown in its equilibrium position. Determine the natural frequency of small-amplitude vertical oscillation of the cylinder. (Hint: Retain only first order terms.)

