1. A 1400 kg car is moving up a 4-deg. slope at an initial speed of 25 m/s. A braking force of 7500N is applied to slow the car. Use the Principle of Impulse and Momentum to determine how long the braking must last for the speed of the car to decrease to 10 m/s.

2. Crank AB has a constant angular velocity of 10 rad/sec clockwise at the instant shown. Find the acceleration of the piston P.

3. The drum has a mass of 60 kg and a radius of gyration about its mass center of \( k_0 = 0.25 \) m. A cord is wrapped around the circumference of the drum and attached to a block having a mass of 20 kg. If the block is released, determine its acceleration and the tension in the cord.