1. The spool has a mass of 8 kg and a radius of gyration about its mass center G of \( k_G = 0.35 \) m. Inextensible cords of negligible mass are wrapped around its inner hub and outer rim as shown. Determine the angular acceleration of the spool and the tension in cord AB.

2. The 50-kg spool is pinned to a fixed point at its mass center G and has a mass moment of inertia of 4 kg\( \cdot \)m\(^2\). The mass of block A is 20 kg and of block B is 50 kg. The system is released from rest. Use the Principle of Work and Energy to determine the speed of block A when block B has fallen 0.2 m.

3. A cord is wrapped around a uniform solid cylinder of mass m, radius \( r \), and mass moment of inertia \( \frac{1}{2}mr^2 \). The other end of the cord is attached to a fixed point. The cylinder is released from rest in the position shown with the cord vertical. Use the Principle of Impulse and Momentum to find the angular velocity of the cylinder and the speed of its center after two seconds have elapsed.