

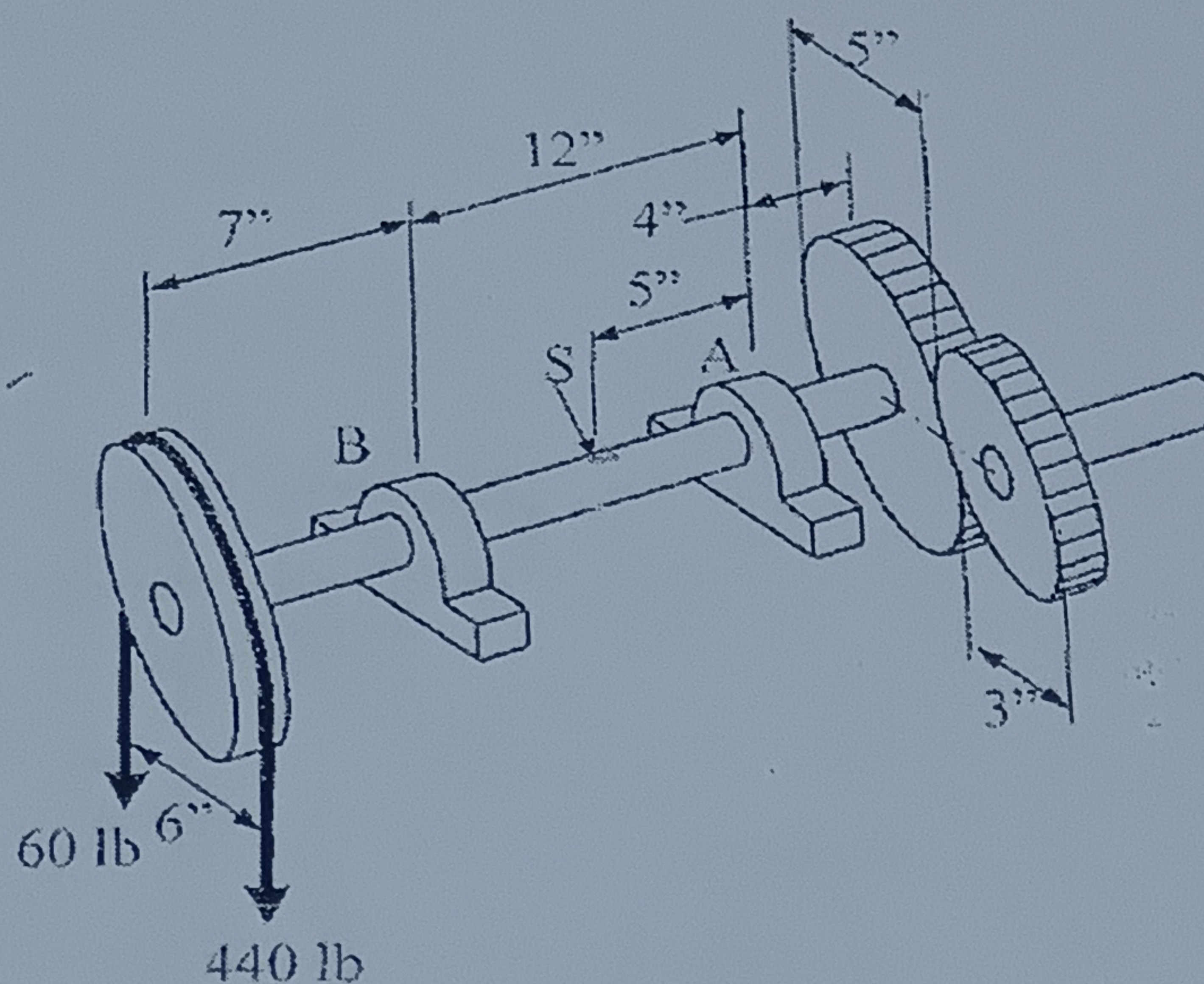
الإمتحان النهائي خريف 2022	كلية الهندسة - جامعة مصراتة
التاريخ: 2023/02/05 ف	إسم المقرر: تصميم أجزاء آلات 2 رقم المقرر: هـ. مك 405
الزمن: 3 ساعات	القسم: الهندسة الميكانيكية

(Answer all the following questions)

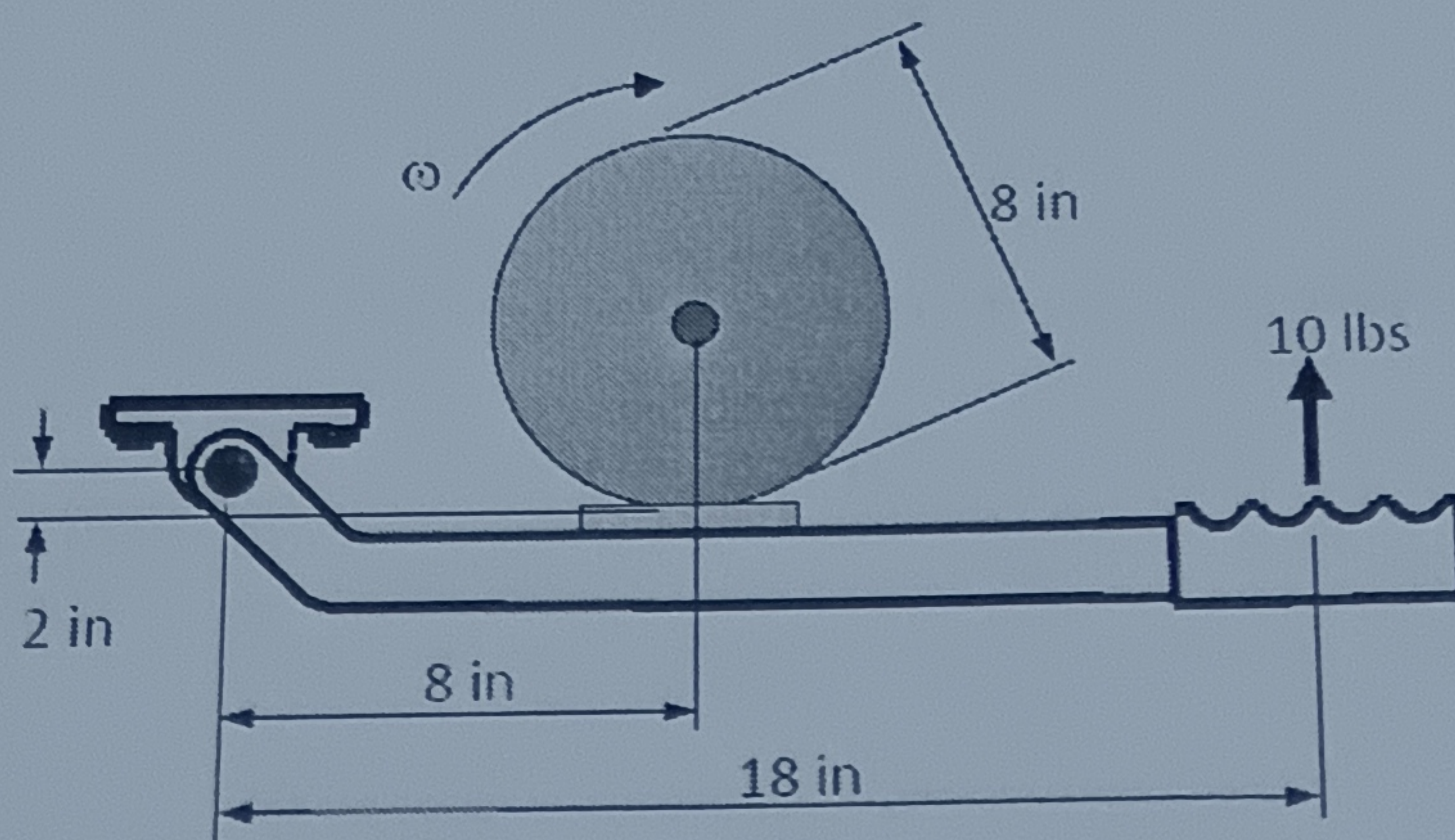
1. Power is transmitted to a shaft through a pair of gears, with 20 degree pressure angle and pitch diameter as shown. The shaft rotates at a constant speed of 1200 rpm. Power is subsequently transmitted to a belt drive having a sheave diameter and forces as shown.

Determine:

- The torque on the shaft
- The power transmitted through the shaft
- The bending point at the point labeled S
- The radial supporting force at bearing B



2. For the block brake shown, determine the maximum braking torque that can be provided. The kinetic coefficient of friction between the brake pad and the drum is 0.30. (10 points)



3. A 20° , full-depth steel spur pinion is machined with 18 teeth, a diametral pitch of 10, and face width of 1.25. A standard root fillet is used. The pinion operates at 1200 rpm and mates with a 40-tooth steel gear. Determine the minimum power of the gearset if the core stress is limited to 10 ksi and the surface stress is limited to 60 ksi.
4. The shaft shown rotates at 850 rpm. Power is transmitted to a shaft through a pair of a spur gears at C, with 20° pressure angle and pitch diameters as shown. The V-belt sheave A delivers 2 hp to a blower. The chain sprocket at D delivers 4 hp to an auger. Determine
- The torque on the shaft between B and C
 - The radial supporting force at bearing B

