COP #2

Due Date: 1402/10/26

Engineering Mechanics: Dynamics

University of Tehran | School of Mechanical Engineering

Problem 1

A four-bar mechanism is given in Fig. 1, and it consists of the Crank *OA*, Coupler *AB*, and the output arm *BC*. The masses of the couplers are also given in Fig. 1. All of the bodies in the mechanism can be considered to be uniform. Find and plot the torque *M* that should be applied to the crank at point *O* to maintain the constant speed of the crank at 60 rev/min over the angular range of $0 \leq \theta \leq 2\pi$. Find the largest magnitude *M* during this motion, and also report the angle θ, at which it occurs. Furthermore, find the magnitude of the forces on each pin, and report the maximum magnitude of each pin force along with the corresponding θ at which it occurs.

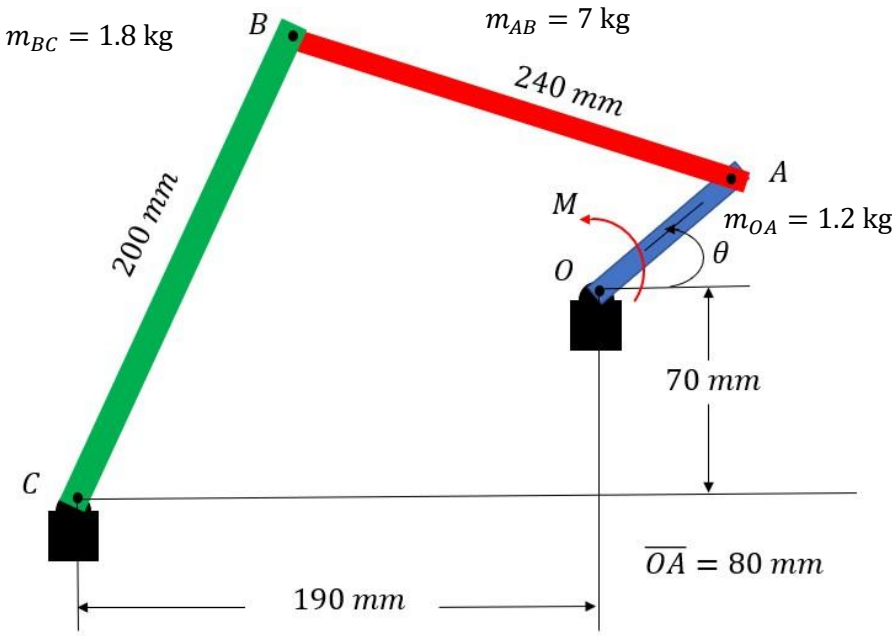

Figure 1 : Configuration of the mechanism

Note:

- Plotting the adequate free-body diagram is crucial in the way of calculating forces and torques.
- Please follow the "Honor Policies" and "Computer-Oriented Problems Policies and Instructions."

- In case of facing any issues or concerns while working on COPs, do not hesitate to contact designated teaching assistants via Telegram or E-Mail:

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Best of Luck.