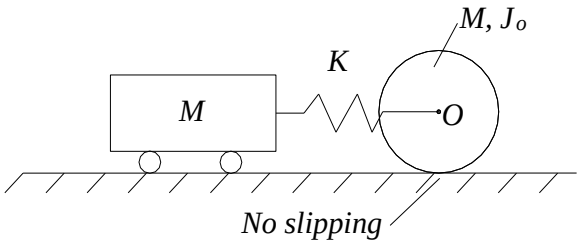
Faculty of Maritime Engineering and Marine Sciences

Ship Vibrations

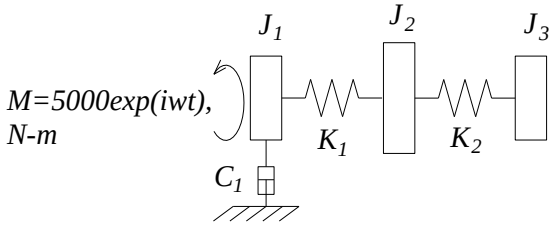
Second Evaluation August 30th, 2019

Student: .....

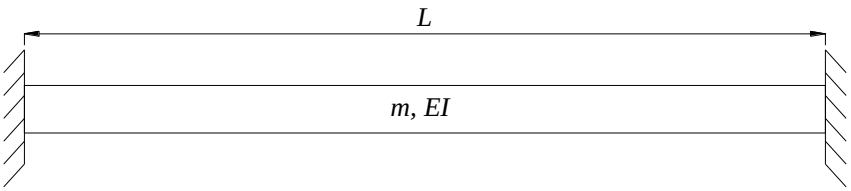
1.- Determine the natural frequencies and mode shapes of the following system, composed by a block and a disk, linked by a spring. The inertia J_o of a disk with respect to its center is $MR^2/2$. (30)



2.- Consider the following in-line system which corresponds to a simplified propulsion system. Properties are: J_i=85, 115, and, 55 N m s^2, K_i=1.0E4 y 1.0E4 N-m, and C_1=2300 N-m-s. Calculate the amplitude of the vibratory torque developed by spring 2, when the excitation has a frequency of 285 cpm. (35)



3.- One of the solutions of the free vibration of a clamped-clamped beam is: $(\beta_i L)^2$ =61.673. Plot the corresponding mode shape, and explain what is its mode number. (35)



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I certify that during this exam I have complied with the Code of ethics of our university.

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