

PROBLEM STATEMENT OF EXPERIMENT 1

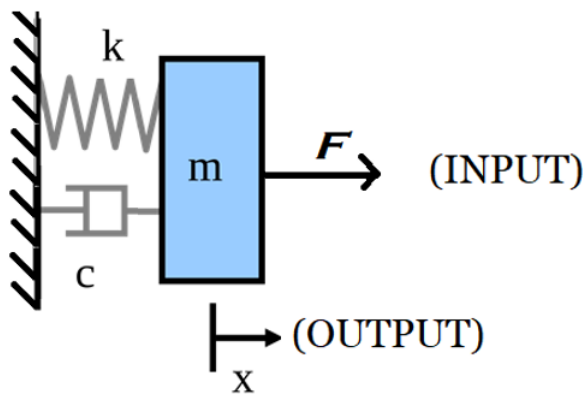
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Motive: To analyse the stability, behaviour and time domain characteristic of the system using the concept of transfer function by taking the example of Spring mass damper system.

Spring Mass Damper system

In this experiment we need to complete the tasks given below

1. Derive the differential equation of Mass Damper System.
2. Derive the transfer function of Mass Damper System.
3. Plot the Poles and Zeroes of Mass Damper System in Scilab
4. Relate time domain analysis with position of poles with different damping factor and spring constant using Xcos.
5. Simulate this system in V-rep simulator and plot time domain graph there also
6. Conclusion about damping with respect to position of poles in s plane.



Topics you will learn:

- Concepts of transfer function
- Finding poles and zeros.
- Model the system in Scilab using Xcos for time domain characteristics.
- Plot poles and zeros in complex s-plane representation to check the stability of the system.

- Observe the system behaviour for unit-step and impulse inputs in time domain.
- Scilab and Xcos for graphical representation.
- Change damping factor and show effects of pole position in Xcos and Vrep both.
- Simulation in V-rep and plotting graph for time domain characteristics of the system