Experiment No. 4

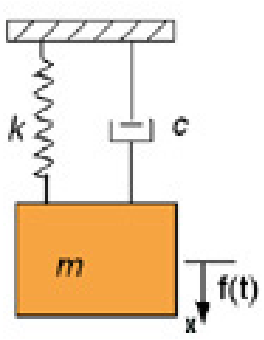
Title: Mathematical modelling and simulation of mass-spring-damper system.

Objectives:

1. To learn mathematical modelling of mass-spring-damper system.
2. To generate transfer function for mass-spring-damper system in MATLAB.
3. To design a model in SIMULINK for the transfer function of mass-spring-damper system.
4. Observe the step response of mass-spring-damper system in MATLAB and SIMULINK.

MATLAB:

1. Write a MATLAB program to generate the transfer function for the mass-spring-damper system shown in figure below, with m=5, c=0.35 and k=0.5.



2. Plot the step response of the system designed in Q.1.

SIMULINK:

3. Design the block diagram in SIMULINK for the mass-spring-damper system modelled in Q.1. Visualize the step response of the system on the scope. (Hint: use SIMULINK blocks `Step`, `Integrator`, `Sum` and `Scope`)

Conclusion: (Hint: write a brief note of tasks performed in this experiment)