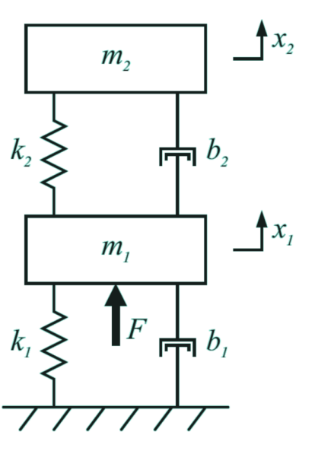
Exercises Sheet

1. Calculate the transfer Function

* A diagram of a machine

  AI-generated content may be incorrect.We depend on Force balance equations
* Convert to Laplace transform

1. Calculate the transfer Function and

A diagram of a rectangular object with arrows pointing to the side

AI-generated content may be incorrect.

* Force balance equations
* A diagram of a rectangular object with arrows and letters

  AI-generated content may be incorrect.Force balance equations at :
* Laplace Transform
* Transfer Function

1. Calculate Transfer function and

A diagram of a physics experiment

AI-generated content may be incorrect.

* Torque balance equation for first inertia
* Laplace Transform
* Torque balance equation for second inertia
* Laplace transform
* Transfer function
* Find Transfer function by yourself

A diagram of an inductance

AI-generated content may be incorrect.

1. A diagram of a circuit

   AI-generated content may be incorrect.Calculate Transfer Function

* Kirchhoff’s Voltage Law KVL

* KVL

1. State-Space modelling

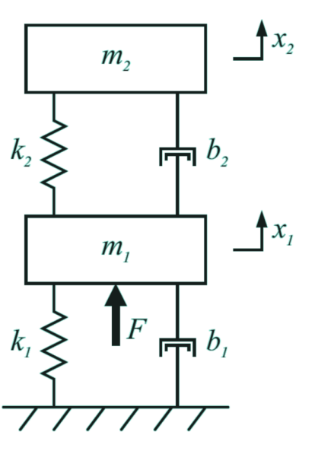
* It’s different for modelling-like transfer function and it’s designed to simplify the systems with multiple inputs and multiple outputs and find the relations between them
* State-space model is widely used at advanced control
* In our course we will use it for system identification and parameter estimation.

1. Find the state-space model for the following system

A diagram of a machine

AI-generated content may be incorrect.

* Force balance equation
* Decomposed to first order states
* Separate the highest order on LHS
* Replace state variable with state vector
* Formulate state-space function

1. Find the state-space model for the following system

* Force balance equation
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