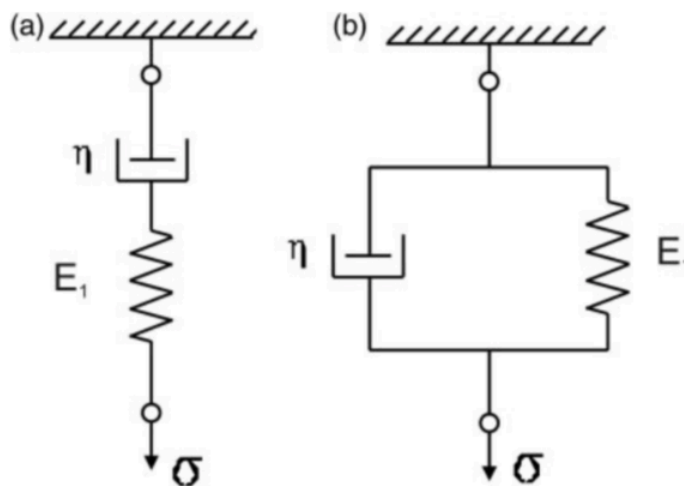


Exercise 8: Viscoelasticity

1. For an applied *step load* (instantaneously applied stress), sketch the **deformation vs. time curves** for the two material models below (fig. 1). What type of material behavior does this test characterize?
2. For an applied *step deformation* (instantaneously applied displacement), sketch the **stress vs. time curves** for the two material models below (fig. 1). What type of material behavior does this test characterize?



I. (a) Maxwell model. (b) Voigt-Kelvin model.

3. Propose a spring-damper model (a configuration of springs and dampers) that can capture the effects of the tests below on articular cartilage. Explain your choice of elements, and their contribution to the overall system response.

