1. How might the presence of a low temperature loss peak in DMA tan\(\delta\) plots, such as the \(\gamma\) peak in nylon, be a possible indicator of the polymer’s having good high-rate impact resistance?

2. Describe how the activation energy in the Arrhenius/Eyring theory for the shift factor \(\log a_T\) can be obtained from measurements of the relaxation modulus at various temperatures. Contrast this theory with that of the WLF formulation.

3. What are thermoplastic elastomers? How do they work on a molecular level?

4. For the three-element spring-dashpot model here:
   (a) Sketch the relaxation and compliance functions \(G_{rel}(t)\) and \(J_{crp}(t)\) conceptually, without recourse to equations.
   (b) Develop the differential equation for the model, and solve it for compliance \(J_{crp}(t)\).