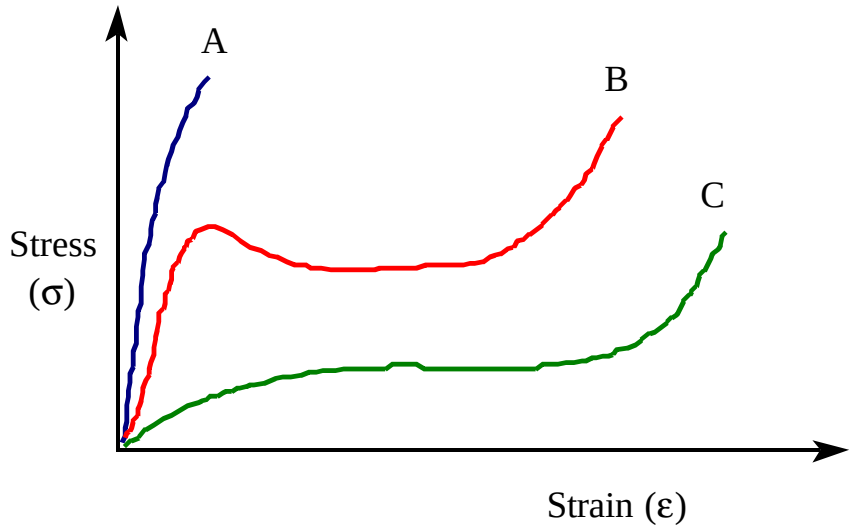
PLMSE406 practise test #3

for chapter 10 practice questions were given in the previous in class exam (the 3 questions that were not graded and given as bonus points)

The following data were obtained from an INSTRON experiment:



1. Which of the three experiments (A,B, or C) was studying a semi-crystalline polymer above Tg?

2. Which of the three curves (A,B, or C) was studying the stiffest (higher modulus) material?

3. What does the area under the strain/stress curve provide:

   A. the energy to break
   B. the energy to elastically deform the material
   C. the impact strength of the materails
   D. the compliance of the material

A DMA experiment probes the response below:

$$t(t) = g_o [G'(w)\sin wt + G''(w)\cos wt]$$

From the quantities:

A. τ(t)
B. G'(ω)
C. G''(ω)
D. ωt

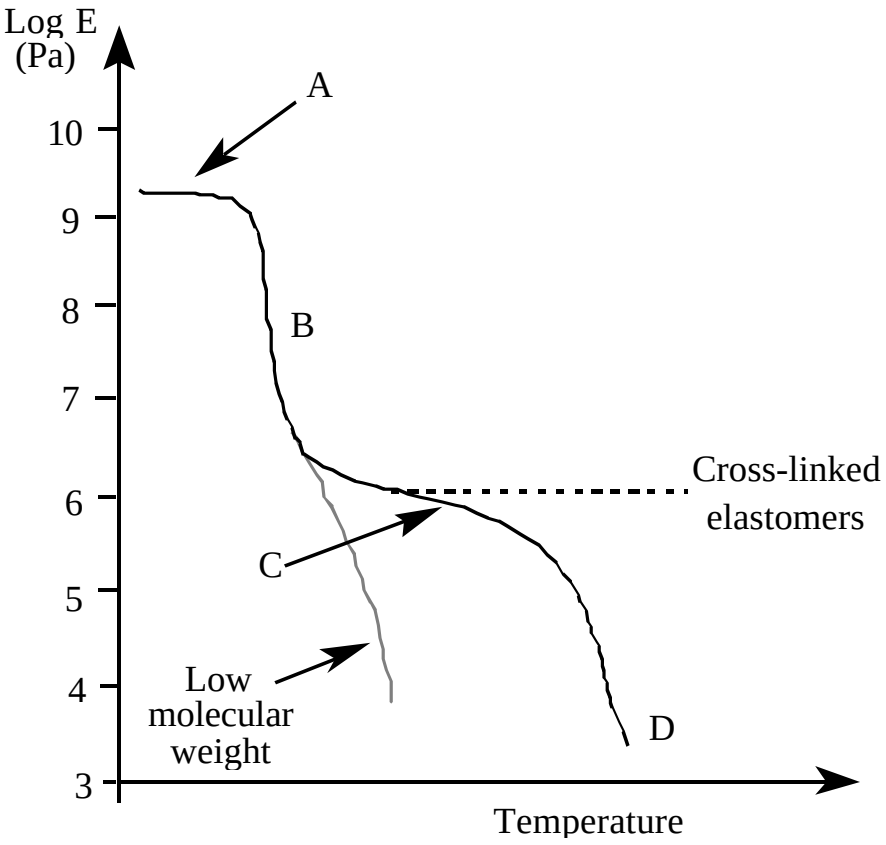
4. Which quantity is defined as the storage modulus?

5. Which quantity is the loss modulus?

6. What is the most crucial factor responsible for the low toughness of polymers?

   A. the low cost high volume processing conditions
   B. the entanglements between chains
   C. the formation of crazes that absorb lots of the deforming energy
   D. the fact that there is not a strong bonding between chains (it is only the van der Waals attractions that keeps them together)

The following **temperature** behaviour of the Young modulus (E) is shown for an amorphous polymer:



7. Which region is the glassy region?

8. Which letter represents the rubbery region?

9. At which region would you process the material to form a plastic soda bottle?

10. Does the location of B depend on the polymer?
    A. yes, it depends on the glass transition temperature
    B. yes, it depends on the melting point of the polymer
    C. no, because every polymer becomes soft (lower E) at higher temperatures
    D. no, it is a universal temperature and relates to the shift factor (a_T)