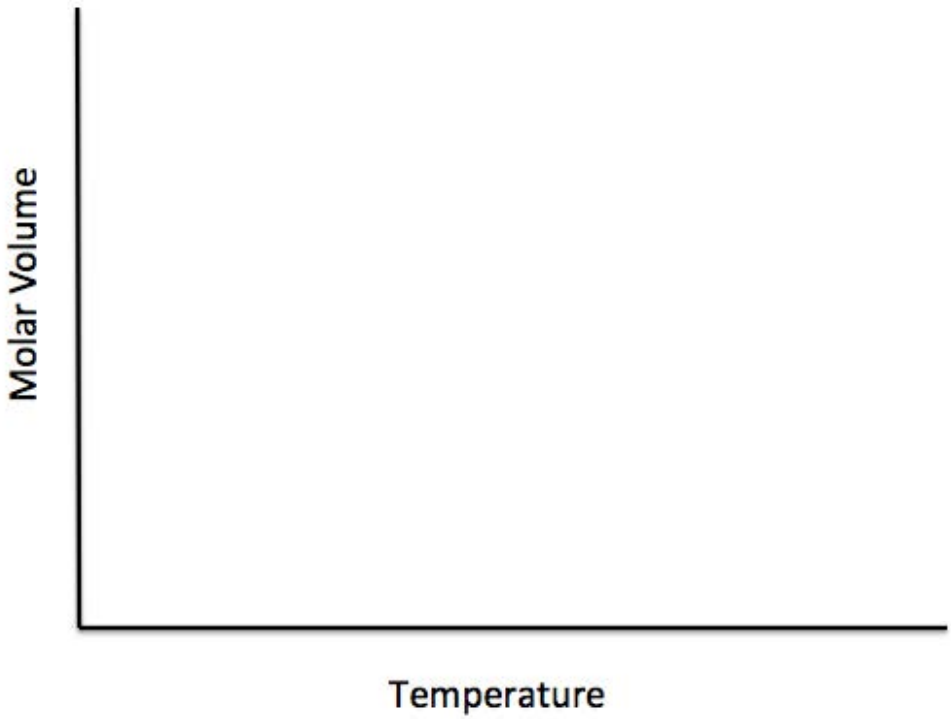
Name_____
Section_____

3.091 Do yourself a solid.

3.091 Introduction to Solid State Chemistry
Fall Term 2018
Quiz 8 (A)

1) Shown below is a processing pathway for creating a glass from a crystal.

(a) Label the melting temperature(s) (T_m) and the glass transition temperature(s) (T_g) on the temperature axis: (1 point)



(b) Label the line segments I, II, III, and IV crystalline, amorphous, liquid, or super cooled. (2 point)

(c) Rank A, B, and C from least to greatest disorder. Explain in one sentence how you know. (1 point)

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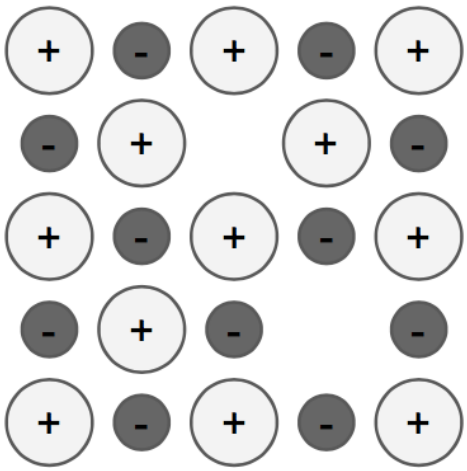
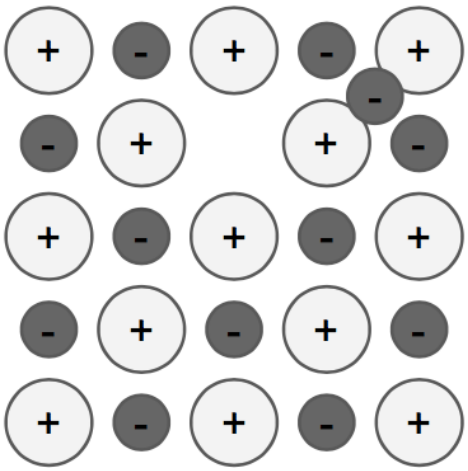
(d) Is the cooling rate of A or B greater? (1 pt)

2) Fill in the blanks: (2.5 pts)



_____ Defect

is made of two _____



_____ Defect

is made of one _____

and one _____

3) Look at your atomic model. Isn't it pretty? You shake it vigorously and see that 12 vacancies have formed. This represented the material at T= 900K. You then gently tap the side of the model until only 7 vacancies remain, representing your material at T = 500K. Assuming 800 atom sites in your model, what is the vacancy formation energy for this material (in eV)? (2.5 pts)

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