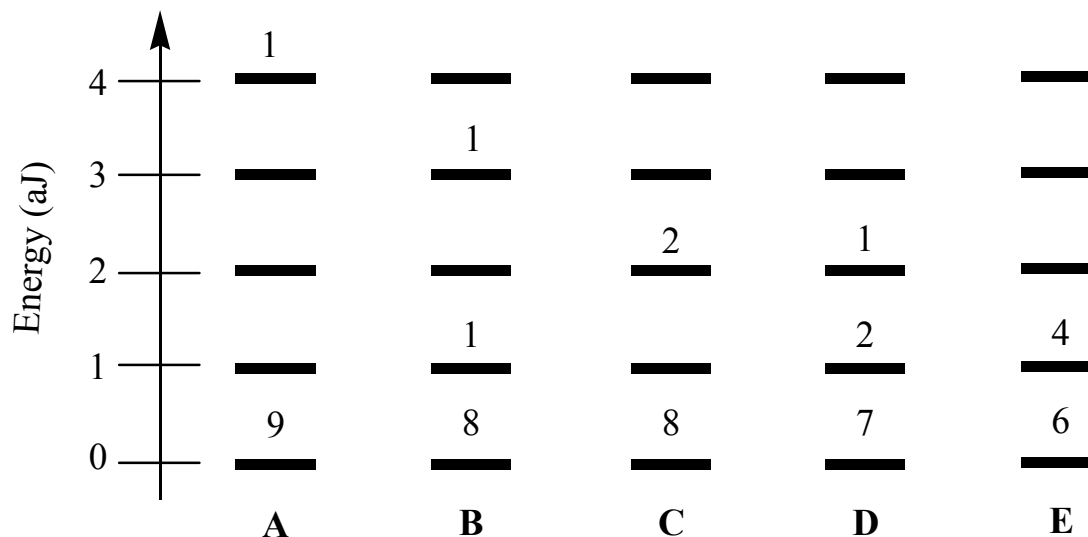


**General Chemistry II**  
**Chapter 7 Example Problems**

1. Let's revisit an example from Chapter 2. We have ten particles and  $4 \times 10^{-18}$  J (that is, 4 aJ) of energy. The particles have equally spaced (vibrational) energy levels 1 aJ apart. This means that each particle can gain or lose 1 aJ of energy at a time. (This is why we care about  $\Delta E$ !) Here are all the possible energy distributions:



$$W_A = 10 \quad W_B = 90 \quad W_C = 45 \quad W_D = 360 \quad W_E = 210$$

- (a) Calculate the change in entropy (in  $\text{J K}^{-1}$ ) as a system goes from Distribution A to Distribution D.
- (b) Calculate the change in entropy (in  $\text{J K}^{-1}$ ) as a system goes from Distribution D to Distribution E.

