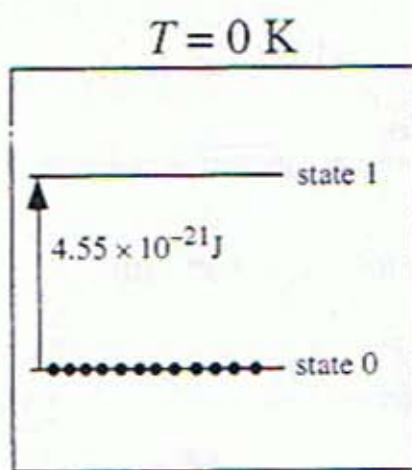
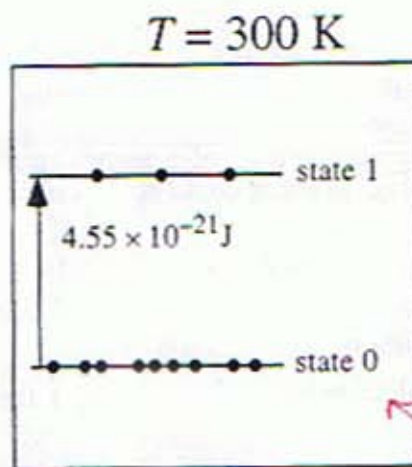


Model 1: A Hypothetical Molecule with only Two States at Different Energy Levels.

• = molecule

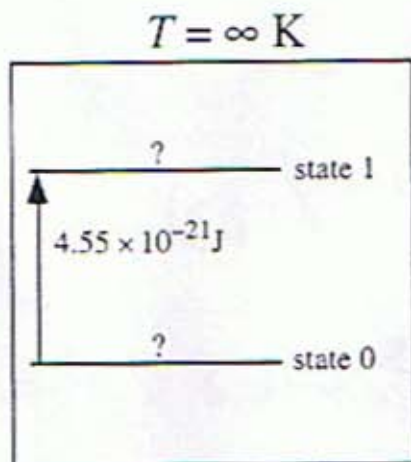


All of the molecules are in the lowest possible energy level at $T = 0 \text{ K}$.



As the temperature increases, some of the molecules gain energy. One-fourth of the molecules are in the excited state at $T = 300 \text{ K}$.

$\frac{3}{9} = \frac{1}{3}$ total = 4
~~total is 12~~
 $\frac{3}{9}$ total is 12
 $\frac{1}{2}$



Information

The thermal energy is defined as the energy that the system has because it is at some temperature other than zero K.