Reading questions Fundamentals

What is the equation which relates the Pressure, Volume and Temperature of gas to each other?

What is the definition of force?

What is the definition of work?

What is the definition of kinetic energy?

What is the definition of coulombic energy?

What equation relates frequency and wavelength for light?

What equation gives the energy of a single photon?

What is the difference between the functions $e^{-x}$ and $e^{-x^{2}}$?

Units for spectroscopy:

IR uses cm-1, X-ray uses eV NMR uses MHz

What exactly are these units? How do you convert between them?

Convert:

1600 cm-1 to meters in wavelength and nm

Find the wavelength of light with an energy of 14.6 eV

What is the energy in cm-1 of light with a wavelength of 1.0 x 10-4 m

Reading question:  Determine N2/N1 Eqn F19  for an energy level difference, which is 400 MHz (NMR), 2700 cm-1 (IR), and 1 x 10 -10 m (X-rays)

You will need to pick a temperature.  Let's use, 300 K  and also 4 K