*Except where noted, all answers can be found in PASCO write-up. Please note that there are two writeups that we will use, i.e.,* ***Atomic Spectra*** *EX-5546B and* ***Educational Spectrophotometer Accessory Kit and******Systems****. Both can be found on PASCO website.*

**Background**

1) What are atomic spectra? Be sure and explain how why the lines are discrete and not continuous.

2) Go to this website which is called **“How a diffraction grating works (without equations)”** and write a short summary of how a diffraction grating works. The explanation uses Huygens wavelets to explain.

<https://wp.optics.arizona.edu/sfjacobs/wp-content/uploads/sites/47/2016/06/DiffractionGratings.pdf>

3) See Equation 2 on page 2 of ***Atomic Spectra*** *PASCO**instructions*?

Plug in the values for electron mass, charge, permittivity & Planck’s constant and show how equation 3 is obtained. Be sure and show unit conversion also.

**Experimental apparatus.**

4) What is an ‘electrical ground’?

5) How is grating line separation determined. See page 5 of *.* ***Atomic Spectra*** *EX-5546B writeup.*

6) Why is it dangerous to look directly into the mercury lamp? . See page 6 of *.* ***Atomic Spectra*** *EX-5546B writeup.*