NSM12C PAL Take-Home Quantum Mechanics Name: _____

Having read the material in chapter 7 you should by now be familiar with the following equations and constants. Prior to using them in calculations, it is important to understand the meaning and units of each.

Chapter 7 Key Equations:

(1) $\nu \cdot \lambda = c$ $E = h \cdot \nu$ (2) $E = \frac{h \cdot c}{\lambda}$ (3) $\lambda = \frac{h}{m \cdot v}$ (4) $\Delta x \cdot m\Delta v \geq \frac{h}{4\pi}$

Bohr Atom $E_n = -2.18 \times 10^{-18}\,J \times \frac{1}{n^2}$ $\Delta E_n = -2.18 \times 10^{-18}\,J \times \left(\frac{1}{n_{fin}^2} - \frac{1}{n_{in}^2} \right)$ $\lambda_{photon} = \frac{h \cdot c}{|\Delta E|}$

Key Constants:

$c = 2.998 \times 10^{8}$ m/s $h = 6.626 \times 10^{-34}$ J·s $R_H = 2.18 \times 10^{-18}$ J

1. Discuss and write down what each of the following variables or equations represents:

ν :_____ units: _____ λ : _____ units: _____

c : _____ units: _____ h : _____ units: _____

m : _____ units: _____ v : _____ units: _____

x : _____ units: _____ n : _____ units: _____

E_n : _____ units: _____ ΔE_n : _____ units: _____

Eq. (2) : _____ units: _____ Eq. (3) : _____ units: _____

Eq. (4) : _____ units: _____