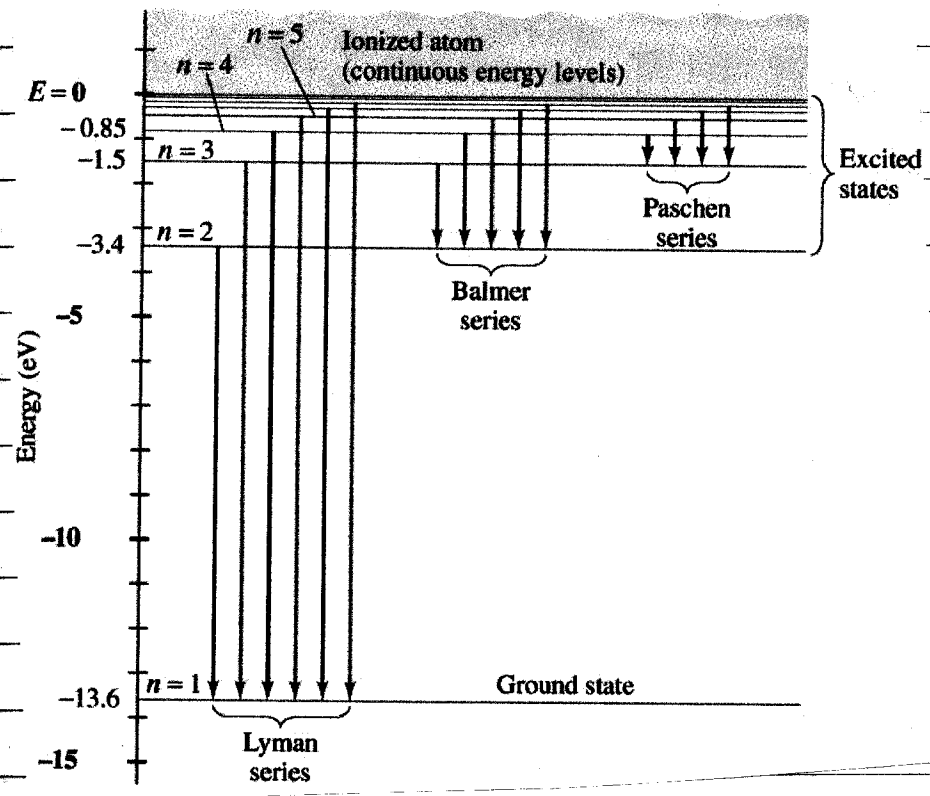
week 8 - Phys B - Giancoli Ch 38
#46(a,c), 48, 49
Raff Ch 11 #11

C, 38.46 / 975 Find λ_2 of second Balmer line ($n=4$ to $n=2$) and third λ_3 ($n=5$ to $n=2$) Using Fig 38.25



$E_4 = -0.85\ eV$

$E_2 = -3.4\ eV$

$\Delta E =$

$\Delta E = \frac{hc}{\lambda}$

$\lambda =$

(b) $E_5 = \frac{E_1}{5^2}$ where $E_1 = -13.6\ eV$ → $E_5 =$

4/8 What is the longest wavelength capable of ionizing H atom in ground state? Lowest energy photon will leave ionized electron with essentially zero excess kinetic energy:

C. 38.19 What wavelength photon would be required to ionize
975 a H atom in the ground state and give the ejected e^- kinetic energy $K = 10.0\ eV$

$e^- \rightarrow$ free

photon —o

e^- — E_1

$E_{before} = E_{photon} + E_1 = E_{after} = K$

$$\frac{hc}{\lambda} + E_1 = K$$

$\lambda =$

Ref 11.11 Compute the range of emission energies for the
589 Lyman, Balmer, and Paschen series of Hydrogen.

Refer to fig 38.25 on the previous page. $\Delta E = \frac{hc}{\lambda}$