Practice Problem 1 (Atomic Spectra)

Calculate the energy required to completely remove an electron (ionize the atom) from the ground state (n = 1) of a hydrogen atom?

Practice Problem 2

In the 2007 US Open, Venus Williams hit a serve at 207 km/hr. Calculate the deBroglie wavelength of the tennis ball if it weighed 57.0 g?

Practice Problem 3

An electron is moving near an atomic nucleus has a speed of 3×10^6 m/s ± 1%. What is the **<u>minimum</u>** uncertainty in its position (Δx)?

Practice Problem 4 – Fill the table for n=1, 2, 3, and 4

n	l (0 to n-1)	m_l (-l to + l)	Subshell Designation	Number of orbitals in subshell	Number of orbitals in shell

Practice Problem 5: Quantum Numbers

Practice: Give the name, magnetic quantum numbers, and number of orbitals for each subshell with the given n and l quantum numbers:
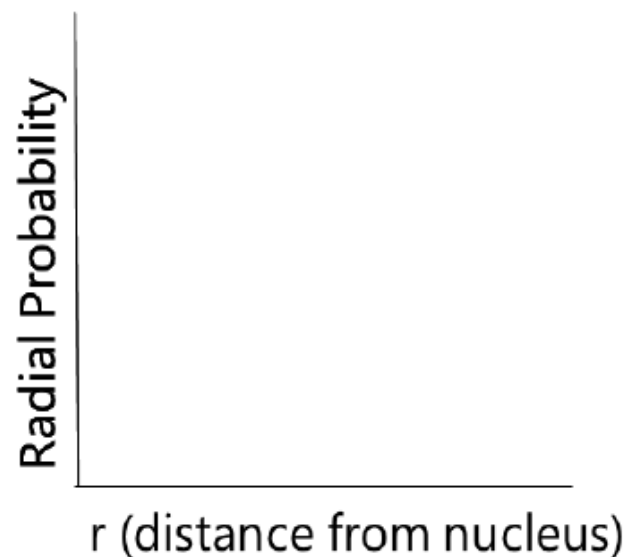
(a) n = 2, l = 1

(b) n = 1, l = 0

(c) n = 5, l = 2

(d) n = 3, l = 3

Sketch the radial probability distribution for a 2p orbital
(For questions like these, you should be able to roughly determine the shape of the curve, keeping in mind the radial nodes. You are not expected to sketch a precise radial probability distribution chart.)

Practice Problem 7

Which of these following transitions in a Hydrogen atom, will result in the highest amount of energy *released*? Explain your reason. (Assume all are allowed transitions)

A. From 1s to 2p
B. From 3p to 2s
C. From 5f to 2p
D. From 3p to 1s
E. From 1s to 5p
F. From 2p to 1s