Quiz Checklist

Note : This list is not necessarily exhaustive; ultimately, you are responsible for whatever came up in class!

Up to Rutherford

Dalton's ideas about matter, elements & cmpds evidence for subatomic particles Thomson & Millikan experiment "Plum Pudding" model radioactivity & X-rays, experimental description Rutherford experiment Rutherford model: dense nucleus, empty space ... subatomic particles: e⁻, p⁺, n^o atomic number, mass number & atomic mass isotopic notation atomic mass of elements (= isotopic mixtures) ions: charge as a result of loss/gain of e's names of first 36 elements review SI units & SI prefixes

Bohr Model

behavior of waves (diffraction/interference, refraction/dispersion) regions of EMR photoelectric effect: functional diagram, workfunction (= binding energy) minimum frequency, KE of emitted electrons EMR as particle phenomenon, photons Planck equation continuous & line spectra gas discharge tubes, functional diagram & process description empirical analysis of H spectrum modern analysis of H spectrum emission & absorption of EMR Bohr atom quantum number, radius, energy levels ionization energy correlate lines in a spectrum w/ electronic transitions extension to "hydrogenic" species

Schroedinger Model of H Atom

de Broglie equation Heisenberg Uncertainty Principle properties of standing waves general description of Schroedinger equation & wavefunction quantum numbers n, ℓ , m_{ℓ} and their relationships visualization of orbitals: Ψ , Ψ^2 (PP), $4\pi r^2 \Psi^2$ (RP), electron density chart, containing envelope (surface boundary) graph recognize orbital identity from various imagery description of nodes & phases penetration phenomenon

Multielectron Atoms & Periodic Table

penetration effect on energy level degeneracy m_s , e^- spin quantum number rules for building e^- configurations various notation methods for e^- configurations Periodic Table as a reflection of e^- configurations effective nuclear charge, Z_{eff} shielding & repulsion periodic trends in PT size of atoms and ions ionization energy electron affinity magnetic properties chemical properties