**AP CHEMISTRY CHAPTER 6: ELECTRONIC STRUCTURE OF ATOMS (Pgs. 214-223 and 234-255)**

EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Questions:

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| **Electronic Structure-2**  Electronic structure is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  What is one way that the properties of extremely small particles are explained? :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| http://www.grandinetti.org/resources/Teaching/Chem121/Lectures/QuantumTheoryofLight/wave.gif**Waves-3-4**  Label the wavelength, crest/peak, trough:  The wavelength **(*λ*)** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Frequency **(*ν*)**is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  The longer the wavelength, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the frequency. | |
| **Electromagnetic Radiation-5**  All \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ travels at the same \_\_\_\_\_\_\_\_\_\_\_\_\_.  The speed of light is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Equation for speed of light: |  |
| **The Nature of Energy—Quanta-6-7**  What cannot be explained by the wave nature of light? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ explained it by assuming that energy comes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ called \_\_\_\_\_\_\_\_\_\_\_ (singular:\_\_\_\_\_\_\_\_\_\_) | |
| **The Photoelectric Effect-8**  The photoelectric effect was explained by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ using \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Each metal has a different \_\_\_\_\_\_\_\_\_\_\_\_\_ at which it \_\_\_\_\_\_\_\_\_\_\_\_\_ electrons. At a \_\_\_\_\_\_\_\_\_\_\_\_ energy, electrons are not emitted.  What did Einstein conclude?  E=  *h* is \_\_\_\_\_\_\_\_\_\_\_\_\_ constant, and equals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | |
| **Continuous vs. Line Spectra-10**  What is NOT observed for atoms and molecules? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Where does one see this? \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Each element has a unique \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Which is made up of \_\_\_\_\_\_\_\_\_\_\_\_ wavelengths. | Label Each: |
| **The Hydrogen Spectrum-11**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( ) discovered a formula relating the \_\_\_\_\_\_\_\_\_\_\_\_\_ to integers.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ advanced this formula.  Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ explained why this mathematical relationship works. | |
| **The Bohr Model-12**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ adopted Planck’s assumption and explained these phenomena: | **The Bohr Model-13** |
| **The Bohr Model-14**  What is the equation for calculating the energy absorbed or emitted from the process of electron promotion or demotion?:  Rh=  ni and nf are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **Limitations of the Bohr Model-15**  What are three limitations of the Bohr model? |
| **Important Ideas from the Bohr Model-16**  What parts were incorporated into the current atomic model? | **Energies of Orbitals—Hydrogen-32**  For a one-electron \_\_\_\_\_\_\_\_\_\_\_\_\_\_ atom, orbitals on the same energy level have the same \_\_\_\_\_\_\_\_\_\_\_. These are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ orbitals. |
| **Energies of Orbitals-Many-electron Atoms-33**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between electrons increases as the number of \_\_\_\_\_\_\_\_\_\_\_\_ increases.  All orbitals on the same energy level are degenerate in multi-electron atoms. T or F ?  Orbital sets in the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  What happens to energy levels? | **Spin Quantum Number, *ms*-34**  In 1920, what was discovered about two electrons in the same orbital?:  The \_\_\_\_\_\_\_\_\_ describes its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which affects its \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  This led to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  What are the vales of the spin quantum number: |
| **Pauli Exclusion Principle-35**   1. No two electrons in the same atom can have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 2. No two electrons in the same atom can have identical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 3. Every electron in an atom must differ by at least \_\_\_\_\_\_\_\_ of the four quantum #’s. | |
| **Electron Configurations-36-38**  Electron configuration is the way \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  The most stable organization is the lowest possible energy, called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Each component consists of :   1. A number denoting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 2. A letter denoting the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 3. A superscript denoting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   Draw a line to each corresponding part of the picture from its correct definition. | |
| **Orbital Diagrams-39**  What does each box in the diagram represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Half arrows represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_  The direction of the arrow represents what? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **Hund’s Rule-40**  “For degenerate orbitals, the lowest energy is attained when the number of electrons with the same spin is maximized.”  What does this mean? | |
| **Condensed Electron Configurations-41**  Valence electrons:  Core electrons:  What are the main components of writing shortened electron configurations?  Write the example for Sodium: | **Periodic Table-42**  Orbitals are filled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Different blocks correspond to different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .  State the location:  S orbital:  P orbital:  D orbital:  F orbital: |
| **Some Anomalies-43**  When do some irregularities occur? | |
| **Chromium as an Anomaly-44**  Actual configuration for Chromium:  Expected configuration:  Why does this occur?  Where does this occur? |  |

**SUMMARY**

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