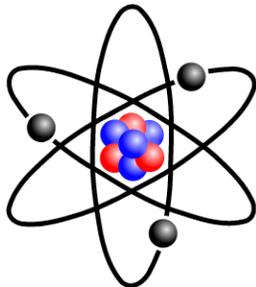


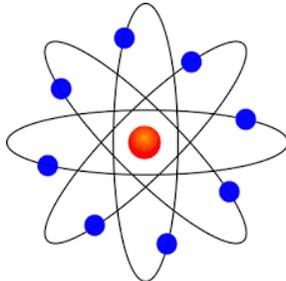
Atoms

I. Use the diagrams below to answer the following questions.

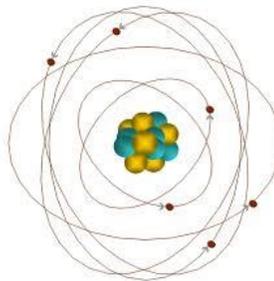
A.



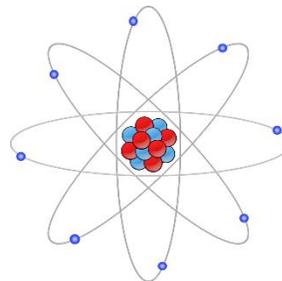
B.



C.

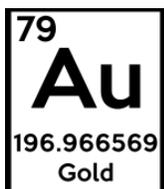


D.

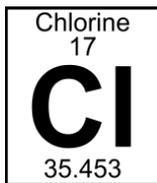


- 1) Which of the diagrams show electrons orbiting a nucleus?
- 2) Which of the diagrams does not show neutrons as part of the atom?
- 3) Which of the diagrams does the best job of communicating the relative size/mass of electrons?
- 4) Which of the diagrams does the best job of showing the concept of energy levels within the electron cloud?
- 5) Which of the diagrams misrepresent the relative size of the nucleus compared to the electron cloud?

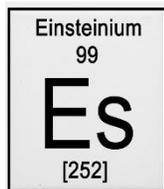
II. Use the information about each element below to answer the following questions.



- 6) What is gold's atomic number?
- 7) How many protons are in a gold atom?
- 8) What is the atomic mass of gold?
- 9) How many sub-atomic particles are in the nucleus of the average gold atom?
- 10) Most gold atoms have 118 neutrons, some have 117. What is the term for these two types of gold atoms?



- 11) How many protons are in a chlorine atom?
- 12) Chlorine's atomic mass is 35.453, what does this mean?
- 13) How many electrons would be in a neutral atom of chlorine?
- 14) Chlorine often takes in an extra electron. What kind of atom does it become when this happens?



- 15) For Einsteinium, identify the:
 - a. Atomic Number –
 - b. Atomic Mass –

III. Identify the correct word for each definition

- 16) _____ - a substance made of only one kind of atom
- 17) _____ - an atom that has a charge because it has gained or lost electrons
- 18) _____ - the region at the center of an atom that contains most of the mass of the atom
- 19) _____ - the number of protons in the nucleus of an atom of an element
- 20) _____ - atoms of the same element with different numbers of neutrons

- 21) _____ - a positively charged (+) particle in the nucleus of an atom
- 22) _____ - a negatively charged (-) particle that occupies the space outside the nucleus
- 23) _____ - an uncharged (\emptyset) particle in the nucleus of an atom
- 24) _____ - the region surrounding an atom's nucleus where electrons orbit

IV. Provide a short response for the following questions.

- 25) Where did the modern word, "atom", come from?
- 26) When J.J. Thomson put a magnet next to a cathode ray tube, how did it change the way we understand atoms?
- 27) When Ernest Rutherford shot alpha particles at gold foil, what was the result and what did he conclude?
- 28) Why was James Chadwick's discovery of the neutron so important in understanding atoms?
- 29) Why do we call the modern model of the atom the "electron cloud" model?
- 30) If a sodium atom has 11 protons, 12 neutrons, and 10 electrons...
- What is its atomic number?
 - What is its atomic mass?
 - Is it an ion? *If no, why not? If yes, what is its charge?*