ATOMS

Date

Period

Drawing Atomic Diagrams

Aim

• use the periodic table to draw atomic diagrams

Notës

Atomic Diagrams (using the Periodic Table)

- * Atomic number (Z) = number of protons
- ★ Atomic mass number (A) = number of protons and number of neutrons
- ★ Number of neutrons = Atomic mass number Atomic number
- ★ Number of Electrons = number of protons
 - ☆ Higher energy levels have room for more electrons
 ☆ maximum number of electrons per energy level

Energy Level	Maximum Number of Electrons	
1	2	
2	8	
3	18	
4	32	
5	(50)	
6	(72)	
7	(98)	

★ an outer shell usually does not have more than 8 electrons

Bohr Diagrams

 Example - the atomic number of magnesium is 12 and the mass is approximately 24. This means the number of neutrons is 12. The electron configuration is 2-8-2. This information can be used to draw a diagram of magnesium. See next column.



Electron-dot Symbols

- show valence electrons as dots at 12 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock and the kernel as a symbol
 - \Rightarrow valence electrons
 - ★ electrons in the outermost principal energy level
 - \star responsible for properties of elements
 - ☆ kernel the rest of the atom (nucleus and other electrons)
- ★ examples

$$\dot{H} \qquad \qquad : \ddot{He}: \\ \dot{Li} \qquad \ddot{Be} \qquad \ddot{B} \qquad : \ddot{C} \qquad : \ddot{N} \qquad : \ddot{O}: \qquad : \ddot{F}: \qquad : \ddot{Ne}: \\ \dot{Na} \qquad Mg \qquad \ddot{Al} \qquad : \ddot{Si} \qquad : \vec{P} \qquad : \vec{S}: \qquad : \ddot{Cl}: \qquad : \ddot{Ar}: \\ \end{cases}$$

Chemistry: Form Ls2.3A

ATOMS

Answer the multiple choice questions below by circling the number of the correct response

- 1. What is the electron configuration of a sulfur atom in the ground state? (1) 2–4 (2) 2–6 (3) 2–8–4 (4) 2–8–6
- A neutral atom always has an equal number of (1) neutrons and electrons, (2) neutrons and protons, (3) protons and electrons, (4) protons, electrons, and neutrons.
- 3. Below is a Bohr-Rutherford diagram of an element.



Which element could be represented by this diagram? (1) calcium (2) cadmium (3) chlorine (4) no known element

4. In the box provided, draw the electron–dot (Lewis) structure of an atom of calcium.



5. In the box provided, draw the electron–dot (Lewis) structure of an atom of chlorine.

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- 6. Which is the electron dot structure for the atom whose electronic structure is 2–8–7? (1) \dot{X} . (2) \dot{X} . (3) \dot{X} . (4) \dot{X} :
- What is the total number of electrons in the second principal energy level of a calcium atom in the ground state? (1) 6 (2) 2 (3) 8 (4) 18
- 8. If · X · represents the electron-dot symbol of an element , that element could be (1) C (2) O (3) B (4) N