

How to draw electron configurations (first two types...)

CaMistry: <http://genest.weebly.com>

Stop in for help every day at lunch and Tues, Weds, & Thurs after school!

After-hours question? Email me at home: eggenest@madison.k12.wi.us



Name _____
Period _____

ANSWERS

Assume all atoms have neutral charge unless otherwise stated.

1. Name two things you can do to an atom which will cause an electron to rise to a higher orbit:

a. heat it

b. Zap it with electricity

2. What is the mass of each, (in a.m.u.s)? 1 proton 1 neutron 0 electron

3. Which has more energy,

a. yellow light

b. green light

<p>4. Draw the dot-dash and circles electron configurations for carbon</p> <p style="font-size: 2em; font-weight: bold;">2-4</p>	<p>5. Draw the dot-dash and circles electron configurations for the most common ion of oxygen</p> <p style="font-size: 1.5em;">O²⁻ has 10 e⁻ !!</p> <p style="font-size: 2em; font-weight: bold;">2-8</p>
<p>6. Draw the dot-dash and circles electron configurations for oxygen</p> <p style="font-size: 1.5em;">oxygen has 8 e⁻</p> <p style="font-size: 2em; font-weight: bold;">2-6</p>	<p>1. Draw the dot-dash and circles electron configurations for the lowest mass element in Group 3</p> <p style="font-size: 1.5em;">Scandium! 21 electrons</p> <p style="font-size: 2em; font-weight: bold;">2-8-11</p>

7. What is the charge of each, (choose 0, +1, or -1)? +1 proton 0 neutron -1 electron

8. When an orbiting electron loses energy the atom emits a

a. photon

b. neutron

c. proton

d. nucleon

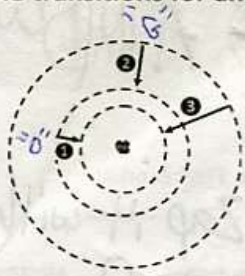
Place the following events in chronological order (1 = first, 4 = last) to describe how an electron absorbs and emits energy:

- ❖ electron absorbs energy at ground state.
- ❖ electron jumps to excited state.
- ❖ atom is energized with electricity.
- ❖ electron falls to ground state.

$$\begin{array}{r} 2 \\ \hline 3 \\ \hline 1 \\ \hline 4(*) \end{array}$$

** Put a star by the step where light is emitted.

The next four questions all refer to the black arrows below which show three possible transitions for an electron orbiting around a nucleus



9. Lines 1, 2, and 3 all represent an electron dropping down. When this happens the atom will

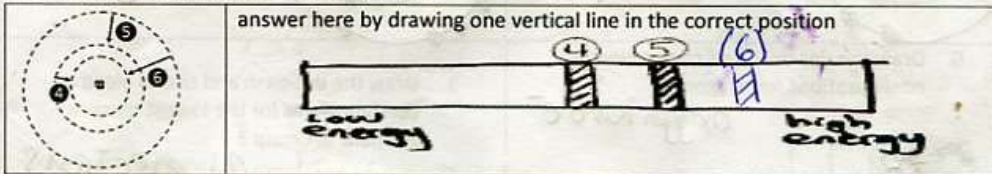
- a. Emit a photon
- b. Absorb a photon
- c. Emit a proton
- d. Absorb a proton

10. Of these three electron movements, which is the highest energy?

- a. transition 1
- b. transition 2
- c. transition 3

11. If transition 1 and transition 2 make an orange photon and a green photon, respectively, what color photon might transition 3 make? BLUE or VIOLET (I will accept any reasonable answer).

12. Draw one new line labeled (6) onto the bright line emission spectrum in the box to show the position where the light caused by 6 would appear



13. Which of the following statements is most likely?

- a. transition 4 is from the absorption of a large amount of energy and transition 6 is from the absorption of a small amount of energy
- b. transition 4 is from the absorption of a small amount of energy and transition 6 is from the absorption of a large amount of energy
- c. transition 4 is from the emission of a Blue photon and transition 6 is from the absorption of a Blue photon
- d. transition 4 is from the emission of a Red photon and transition 6 is from the absorption of a red photon

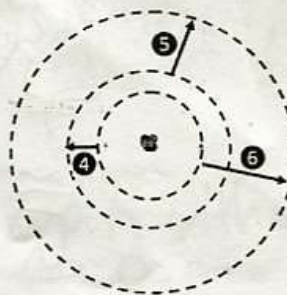
14. Mark (E)xcited state or (G)round state for each of the following electron configurations of neutral atoms.

- a. E 0-1-0
- b. G 1-0-0
- c. G 2-0-0
- d. E 0-2-0

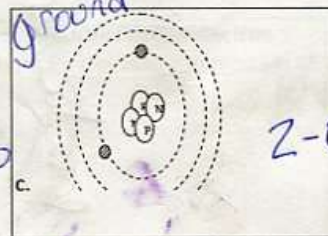
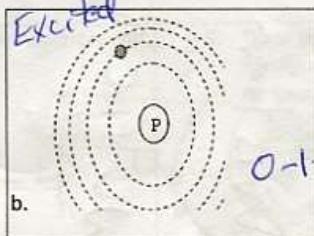
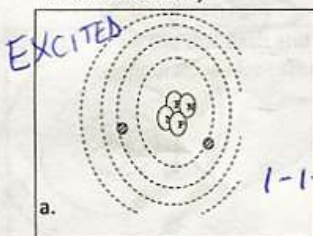
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15. Which of these will absorb the most energy?

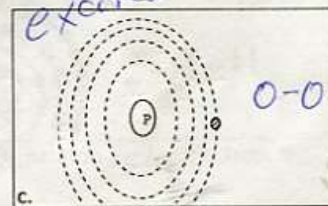
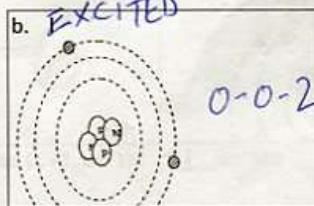
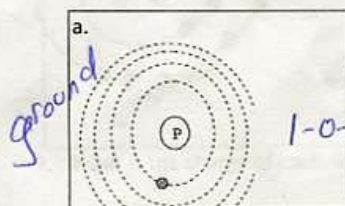
- a. electron transition ④
- b. electron transition ⑤
- c. electron transition ⑥



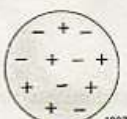
16. Mark (E)xcited state or (G)round state for each of the following electron configurations of neutral atoms. Then write the 0-0-0 style electron configuration. (You may find it helpful to number the orbits, starting with 1 for the innermost orbit.)



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1. Circle the drawing below that is usually called a "Bohr Atom" (because it was invented by Niels Bohr)



Bohr's model was the first that imagined electrons moving in specific places. He proposed circles he called "ORBITS".