

**ASSIGNMENT**

At the top of your assignment, please print “**T3 – Atomic Theory Part 2, your LAST then First name, block and date.** Show all your work for questions requiring calculations; marks will not be awarded for final answers only. Complete these questions in the order given here. *[Marks indicated in italicized brackets.]*

1. Define or describe these terms. *[4]*

- a. Transition                      b. Ground state                      c. Atomic number                      d. Subatomic particles

2. Name these elements. *[2]*

- a.  $Z = 9$                       b.  $Z = 21$                       c.  $Z = 30$                       d.  $Z = 47$

3. Match the letter of the statement with the Capital letter of the correct model. Correct model letters may be used more than once. ***DO NOT CONNECT THE STATEMENTS AND ANSWERS WITH LINES!!*** *[4]*

- |   |                         |
|---|-------------------------|
| a. That atom contains a positive spongy matrix.                     | A. Saturn model         |
| b. The atom contains a tiny nucleus inside layered orbits.          | B. Bohr’s Atomic Theory |
| c. Electrons can transition between orbits.                         | C. Muffin model         |
| d. The atom contains electrons embedded within the positive charge. | D. Dalton’s model       |
| e. The atom contains electrons in randomly oriented orbits.         | E. Nuclear model        |
| f. Atoms are solid.   |                         |
| g. The atom contains a large positive core.                         |                         |
| h. Electrons prefer to exist in their ground state.                 |                         |

C. Answer these questions: ***Be sure you use correct terminology.***

4. Use the Bohr’s atomic model to explain what happens to an electron when it absorbs and releases energy? *[2]*
5. When a gaseous element is heated it will emit light. Use the Bohr model of the atom to explain this observation. *[2]*
6. State the experimental evidence that led Bohr to hypothesize that electrons exist in energy levels at fixed distances from the nucleus and explain how he used it to make this conclusion. *[4]*
7. Explain the significance of this statement: “Emission spectral lines are the fingerprints of elements.” *[2]*
8. Use the Bohr model to explain why every element has it’s own unique emission line spectrum. *[2]*

***[22 marks in total]***

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