

CHAPTER 3 REVIEW

Atoms: The Building Blocks of Matter

SECTION 2

SHORT ANSWER Answer the following questions in the space provided.

1. In cathode-ray tubes, the cathode ray is emitted from the negative electrode, which is called the _____.
2. The smallest unit of an element that can exist either alone or in molecules containing the same or different elements is the _____.
3. A positively charged particle found in the nucleus is called a(n) _____.
4. A nuclear particle that has no electrical charge is called a(n) _____.
5. The subatomic particles that are least massive and most massive, respectively, are the _____ and _____.
6. A cathode ray produced in a gas-filled tube is deflected by a magnetic field. A wire carrying an electric current can be pulled by a magnetic field. A cathode ray is deflected away from a negatively charged object. What property of the cathode ray is shown by these phenomena?

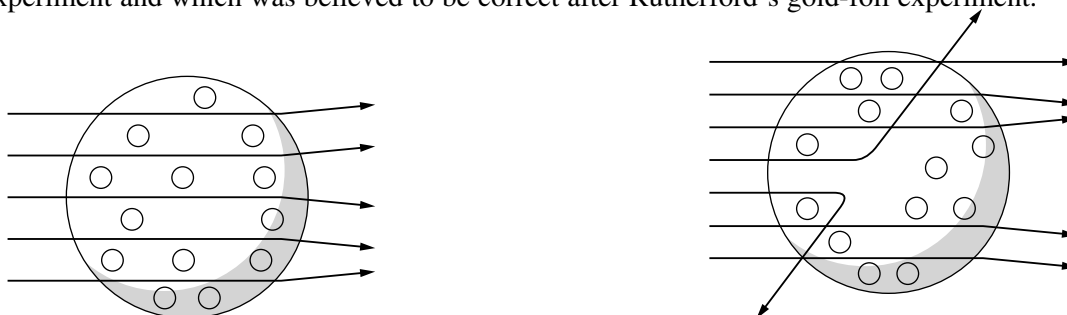
7. How would the electrons produced in a cathode-ray tube filled with neon gas compare with the electrons produced in a cathode-ray tube filled with chlorine gas?

8. a. Is an atom positively charged, negatively charged, or neutral?

b. Explain how an atom can exist in this state.

SECTION 2 continued

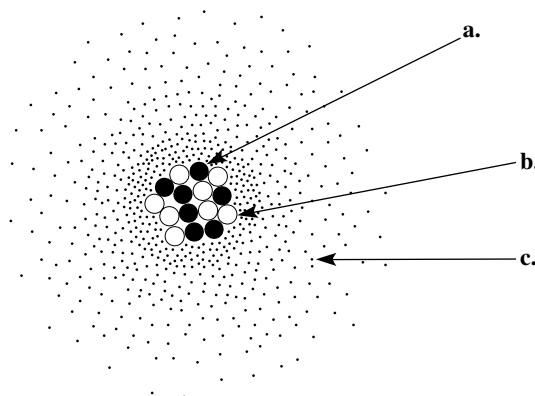
9. Below are illustrations of two scientists' conceptions of the atom. Label the electrons in both illustrations with a $-$ sign and the nucleus in the illustration to the right with a $+$ sign. On the lines below the figures, identify which illustration was believed to be correct before Rutherford's gold-foil experiment and which was believed to be correct after Rutherford's gold-foil experiment.



a. _____

b. _____

10. In the space provided, describe the locations of the subatomic particles in the labeled model of an atom of nitrogen below, and give the charge and relative mass of each particle.



a. proton

b. neutron

c. electron (a possible location of this particle)
