Periodic Table Review

Teacher Answer Key
November 23, 2011

3
1. Which element is a solid at STP and a good conductor of electricity?

1. iodine
2. mercury
3. nickel
4. sulfur

3 Metals are good conductors of electricity. Both mercury and nickel are metals, but nickel is a solid at STP while mercury is a liquid.

3
2. Which element has both metallic and nonmetallic properties?

1. Rb
2. Rn
3. Si
4. Sr

3 Refer to the accompanying diagram, which represents a portion of the Periodic Table of the Elements:

The metalloids—those elements that have both metallic and nonmetallic properties—are found in the shaded boxes. Of the choices given, only choice (3), Si, is a metalloid.

4
3. The carbon atoms in graphite and the carbon atoms in diamond have different

1. atomic numbers
2. atomic masses
3. electronegativities
4. structural arrangements

4 Graphite and diamond are known as allotropes—forms of an element in which the atoms have different structural arrangements in space.

3
4. Which statement describes a chemical property of the element magnesium?

1. Magnesium is malleable.
2. Magnesium conducts electricity.
3. Magnesium reacts with an acid.
4. Magnesium has a high boiling point.

3 A chemical property is one in which the substance is changed when the property is investigated. In other words, a chemical reaction occurs. When magnesium atoms react with an acid, hydrogen gas and magnesium ions are formed.

Wrong Choices Explained:
(1), (2), (4) Malleability, conductivity, and boiling point are physical properties. The magnesium atoms are not changed by these properties.

1
5. Which statement explains why sulfur is classified as a Group 16 element?

1. A sulfur atom has 6 valence electrons.
2. A sulfur atom has 16 neutrons.
3. Sulfur is a yellow solid at STP.
4. Sulfur reacts with most metals.

1 The group numbers of the representative elements are related to the number of valence electrons in an atom of the element, as shown in the accompanying table:

1
6. How do the atomic radius and metallic properties of sodium compare to the atomic radius and metallic properties of phosphorus?

1. Sodium has a larger atomic radius and is more metallic.
2. Sodium has a larger atomic radius and is less metallic.
3. Sodium has a smaller atomic radius and is more metallic.
4. Sodium has a smaller atomic radius and is less metallic.

1 See Reference Table S and the Periodic Table of the Elements. Sodium has a larger atomic radius than

1
7. Which group on the Periodic Table of the Elements contains