



**Answer the questions below by circling the number of the correct response**

- Which element has the smallest atomic radius? (1) Mg (2) Ca (3) Sr (4) Ba
- As one proceeds from lithium to fluorine in the Periodic Table, the tendency for the elements to be oxidized (1) decreases, (2) increases, (3) remains the same
- Which ion has the smallest radius? (1)  $K^+$  (2)  $Na^+$  (3)  $Mg^{+2}$  (4)  $Al^{+3}$
- As the elements in Period 3 are considered from left to right, the ability of each successive element to act as a reducing agent (1) decreases, (2) increases, (3) remains the same
- The element with the most metallic character in Group 16 (VIA) is (1) O, (2) S, (3) Se, (4) Te
- As the elements in Group 14 (IVA) are considered in order of increasing atomic number, the metallic properties of successive elements (1) decreases, (2) increases, (3) remains the same
- In Period 3 of the Periodic Table, the element with the smallest atomic radius is in Group (1) 1 (2) 2 (3) 15 (4) 17
- Which Group 2 (IIA) element has the greatest tendency to form ions? (1) calcium (2) barium (3) strontium (4) magnesium
- Which Group in the Periodic Table contains atoms that form  $-2$  ions? (1) 1 (IA) (2) 2 (IIA) (3) 16 (VIA) (4) 17 (VIIA)
- The elements in Group 2 (IIA) have similar chemical properties primarily because they have the same (1) ionization energies, (2) oxidation potentials, (3) number of principal energy levels, (4) number of electrons in the outermost shell
- As one proceeds from left to right across Period 2 of the Periodic Table, the decrease in atomic radius is primarily due to an increase in the number of (1) orbitals, (2) protons, (3) neutrons, (4) principal energy levels
- The most active metal in Period 4 of the Periodic Table is (1) Fe, (2) Sc, (3) K, (4) Ca.
- In Period 3, as the atomic numbers increase, the pattern according to which the properties of the elements change is (1) metal  $\rightarrow$  metalloid  $\rightarrow$  nonmetal  $\rightarrow$  noble gas (3) metal  $\rightarrow$  nonmetal  $\rightarrow$  noble gas  $\rightarrow$  metalloid (2) nonmetal  $\rightarrow$  metalloid  $\rightarrow$  metal  $\rightarrow$  noble gas (4) nonmetal  $\rightarrow$  metal  $\rightarrow$  noble gas  $\rightarrow$  metalloid
- In going down the Group 15 (VA) elements on the Periodic Table, the metallic properties of the elements (1) decrease, (2) increase, (3) remain the same
- As one proceeds from left to right across Period 3 of the Periodic Table, there is a decrease in (1) ionization energy (3) metallic characteristics (2) electronegativity (4) valence electrons
- As one proceeds from fluorine to astatine in Group 17, the electronegativity (1) decreases and the atomic radius increases, (2) decreases and the atomic radius decreases, (3) increases and the atomic radius decreases, (4) increases and the atomic radius increases.
- As the elements in Period 3 are considered in order of increasing atomic number, the number of principal energy levels in each successive element (1) decreases, (2) increases, (3) remains the same
- If the elements are considered from top to bottom in Group 17 (VIIA), the number of electrons in the outermost shell will (1) decrease, (2) increase, (3) remain the same
- Which represents the correct order of activity for the Group 17 (VIIA) elements [ $>$  means greater than] (1) bromine  $>$  iodine  $>$  fluorine  $>$  chlorine (2) fluorine  $>$  chlorine  $>$  bromine  $>$  iodine (3) iodine  $>$  bromine  $>$  chlorine  $>$  fluorine (4) fluorine  $>$  bromine  $>$  chlorine  $>$  iodine
- Which is most characteristic of metals with very low ionization energies? (1) they are very reactive (2) they have a small atomic radius (3) they form covalent bonds (4) they have a high electronegativity
- Metallic elements usually possess (1) low electronegativities and high ionization energies (2) high electronegativities and low ionization energies (3) high electronegativities and high ionization energies (4) low electronegativities and low ionization energies
- If the members of the halogen family are arranged in order of increasing electronegativity, they are also arranged in order of increasing (1) ionization energy, (2) atomic radius, (3) atomic mass, (4) nuclear charge
- As the elements are considered from top to bottom in Group 15 (VA) of the Periodic Table, the ionization energy (1) decreases, (2) increases, (3) remains the same
- An element that has both a high ionization energy and a high electronegativity is most likely a (1) metal (2) metalloid (3) nonmetal (4) noble gas
- The element with the lowest first ionization energy in any given Period will always belong to Group (1) 1 (IA) (2) 2 (IIA) (3) 17 (VIIA) (4) 18 (0)