

1) The one correct formula among these is

- (A)  $\text{Na}_2\text{OH}$  (B)  $\text{Zn}(\text{NO}_3)_3$  (C)  $\text{Cu}(\text{SO}_4)_2$  (D)  $\text{BaNO}_3$  (E)  $\text{ZnCl}_2$

2) The compound *not* properly named is

- (A)  $\text{Fe}_2\text{O}_3$ , iron(III) oxide.  
(B)  $\text{SO}_2$ , Sulfur dioxide  
(C)  $\text{CuCl}_2$ , copper(II) chloride.  
(D)  $\text{Pb}_3(\text{PO}_4)_2$ , lead(III) phosphate.  
(E)  $\text{P}_2\text{S}_5$ , diphosphorus pentasulfide.

3) Which is an atomic number of an active, metallic element whose oxidation number is positive one?

- (A) 1 (B) 9 (C) 11 (D) 17 (E) 23

4) Each of the elements in a family of the periodic table has the same number of

- (A) protons. (B) neutrons. (C) nucleons. (D) valence electrons.

5) If  $\text{XO}_2$  is the correct formula for an oxide, the formula for the chloride of **X** is

- (A)  $\text{XCl}_2$  (B)  $\text{XCl}_4$  (C)  $\text{XCl}$  (D)  $\text{X}_2\text{Cl}_3$  (E)  $\text{XCl}_3$

6) The number of neutrons in an atom of the radioactive carbon isotope  $^{14}_6\text{C}$ , is

- (A) 6 (B) 8 (C) 12 (D) 14

7) Which symbol represents an atom that contains the largest number of neutrons?

- (A)  $^{235}_{92}\text{U}$  (B)  $^{239}_{92}\text{U}$  (C)  $^{239}_{93}\text{Np}$  (D)  $^{239}_{94}\text{Pu}$  (E)  $^{231}_{91}\text{Pa}$

8) Isotopes of an element differ in

- (A) number of electrons in the outermost shell.  
(B) number of neutrons in the nucleus.  
(C) combining number.  
(D) number of protons in the nucleus.  
(E) atomic number.

9) A hypothetical element **X** has three isotopes:  $^{40}\text{X}$ ,  $^{41}\text{X}$ , and  $^{42}\text{X}$ . Their abundances are 72.0%, 9.00%, and 19.0% respectively. What is the atomic mass of **X**?

- (A) 40.5 u (B) 40.8 u (C) 41.0 u (D) 41.5 u

10) Copper has an atomic molar mass of  $63.5 \text{ g/mol}^1$ . Why is the atomic molar mass *not* a whole number?

- (A) All copper atoms have identical chemical properties.  
(B) The fractional number results from the fact that protons and neutrons have different masses.  
(C) There are at least two naturally occurring isotopes of copper.  
(D) Every copper atom has an atomic mass of 63.5 u.